

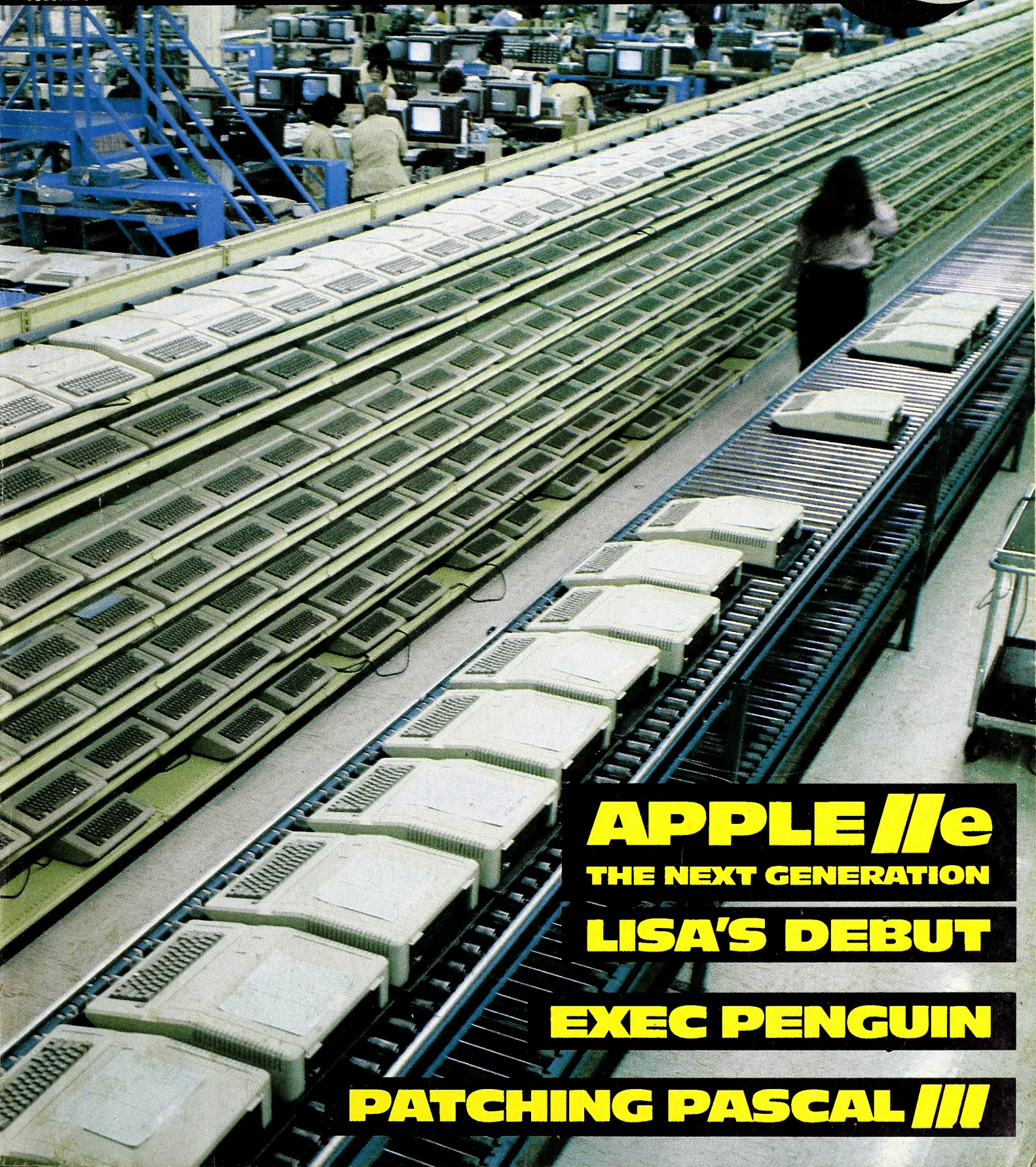
WOTATK



VOLUME 3

FEBRUARY 1983

\$3.00



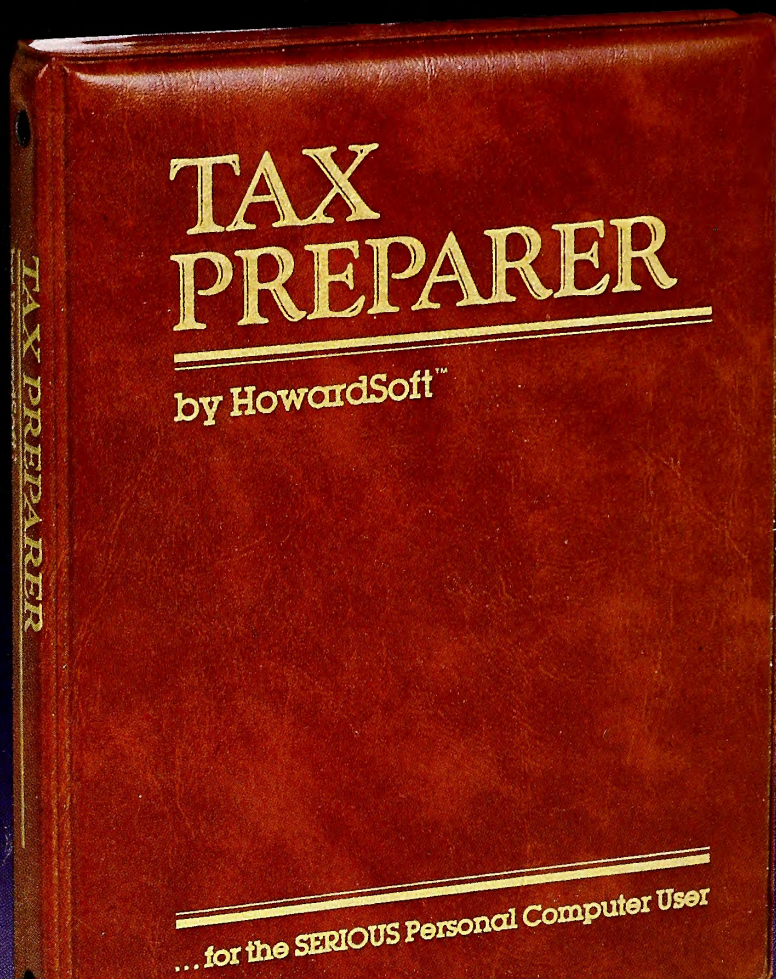
APPLE IIe

THE NEXT GENERATION

LISA'S DEBUT

EXEC PENGUIN

PATCHING PASCAL III



DON'T TAKE CHANCES WITH TAXES! Thousands of tax professionals have used our "Tax Preparer" in the past and have made it #1 in tax software. But we have continually improved the software in response to their "wants" so that NOW it is the most time-saving and error-eliminating tool that any tax preparer could ever own. And it is so fool-proof that even the total novice can now prepare tax returns.

TRULY AUTOMATED TAX RETURN PREPARATION. With low-cost updates as the tax laws change, year-long record-keeping for itemized lists, year-to-year data transfer, instant error-correcting, over 20 forms and schedules built-in, and some state supplements available too, it is the only professional package available at a reasonable price. And most important of all it can be TRUSTED to produce accurate results in a format that is accepted by the I.R.S., because tax-related software is our only business and we take it seriously.

COMPARE FOR YOURSELF at your local dealer. Whether you're a NOVICE OR PROFESSIONAL you'll see why HowardSoft is known for its QUALITY. There may be other tax software, but there is only one "Tax Preparer." (Apple and IBM-PC Editions Available.)

Howard Software Services/8008 Girard Ave., Suite 310/La Jolla, CA 92037/(619) 454-0121



Exec Penguin: A Chilly Visit to Tuxedo Junction

What do you know of penguins? Did you know that their closest relative is the cuckoo? Or that they're good-hearted, funny, lovable, clever, and creative? Read and learn.

DAVID HUNTER 48



The Cat That's the Apple's Meow

What one Connecticut man's done for his cat with an Apple is almost indescribable. He's got his whole house Appleized, too.

JUDYANN CHRISTENSEN 72

It's Here: The New Apple IIe

Clandestinely, Apple stopped making Pluses last October; the new Apple is a near twin on the surface. 118



Dial-Your-Match: The Heart of an Apple

Valentine's Day special. A bulletin board turned heartline, Dial-Your-Match lets singles in computerdom meet without leaving their screens.

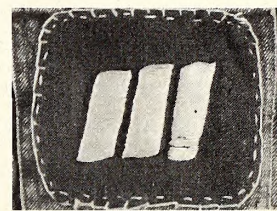
MATTHEW T. YUEN ... 164



Patching Apple III Pascal

Dr. Jeppson wanted Pascal on his ProFile—all of it. And the fact that Apple Inc. didn't provide for that didn't stop him. He shows you how.

JOHN JEPSON 190



FEATURES . DEPARTMENTS

SoftGraph: Do-It-Yourself Business Graphics	DAVID DURKEE	80
Lisa's Debut		143
The Animated Apple	PAUL LUTUS and PHIL THOMPSON	208
Word Processing: A New Format for a Newsmen	JONATHAN MILLER	172
Olivieri's Outline of Word Processors	PETER OLIVIERI	176
Tennis, Anyone?	JOE SHELTON	236
Storytalk: "M.A.C. Gate: The Manners of Logic" ...	RALPH MYLIUS	238

Advertisers' Index	This Page	
All About Applesoft, by Doug Carlston	186	
Assembly Lines, by Roger Wagner	217	
Basic Solution, by William V. R. Smith	56	
Beginners' Corner, by Christopher U. Light	153	
Bestsellers	249	
Buttonwood Apples, by Ken Landis	59	
Contest: Famous February	2	
Contest Winners	6	
DOSTalk, by Bert Kersey	78	
Fastalk	9	
Graphically Speaking, by Mark Pelczarski	146	
Marktalk News	106	
Marktalk Reviews	129	
Mind Your Business, by Peter Olivieri	180	
Newspeak	227	
Open Discussion	33	
The Pascal Path, by Jim Merritt	200	
Schoolhouse Apple, by Jean Varven	99	
SoftCard Symposium, by Greg Tibbetts	157	
The Third Basic, by Taylor Pohlman	65	
Tradetalk	223	
Ventures with VisiCalc, by Joe Shelton	89	

Hardtalk will return next month.

IN NEXT MONTH'S SOFTALK



Mellow March ... Apple-controlled lasers ... Modula-II ... Exec Adventure International ... DOS Be Nimble ... Who'll teach Apple to play a good game of bridge? ... and more ...

INDEX OF ADVERTISERS

ABT Microcomputer Software	232
Accessory III	249
Accessory Products Company	6
Advanced Software Technology	87
Adventure International	169,243
Alpha Byte Computer Products	168
Alpha Logic Business Systems	134
Animation Graphics	51,241
Anthro-Digital Software	149
Apple Computer	28-29,144-145
Applied Analytics	140
Artira Inc.	151
Artsci	123
Avant-Garde Creations	132,222
Aviation Services Limited	70
BASF	109
Beagle Bros	212,221
Bible Research	203
The Boston Company	240
Broderbund Software	250
BudgeCo	3
Business Computer Center	195
Business Solutions	185
Calsoft	214
Cdex Corporation	90
Classified Ads	44-46
CommoSoft	59
CompuShack	37
Computer Advanced Ideas	17
Computer Tax Service	228
Computer Works	35
Consultant Systems	231

Continental Software	107,182,218
Control Data	96-97
Corona Data Systems	8
Craftsbury Software	66
Creative Computer Products	204
Creative Computers	139
Creative Software	197
Data Terminals & Communications	156
DataMost	20,21
David Data	11
Decision Support Software	192
Design Trends	233
Desktop Solutions	184
Diversified Software Research	224
Doss Industries	138
Double-Gold	69
Dow Jones Software	58
Edu-Ware Services	98,206-207
Einstein Corporation	53
Evergreen Data Systems	213
Evergreen Micros	95
Financial Software	61
FlipTrack Learning Systems	93
Foxware Products	60
Frobco	68
Futra Company	155
Gold Disk Software	178
Gourmet Software	251
Happ Electronics	194
Hayden Software	114,136-137,216

Highlands Computers	104
High Order Micro Electronics	230
Howard Software Services	Cover 2
Howard W. Sams Co.	27
Human Systems Dynamics	115
Intelligent Statements	34
Interactive Microware	62,141
Interactive Structures	71,189
Kensington Microware	24-25
Krell Software	4
Last Electronics	215
The Learning Co.	105
Lightning Software	100
Metamorphic Systems Inc.	113
Micro Co-op	227
Micro D	248
Micro Lab	10
Micro Magic	255
Microsoft	120,162-163
MicroStand	110
Microtek	84
Mimco	256
Morgan Computing	142
Morningstar	166
Muse Software	126
National Software	159
Nonagon	180
Northeast Expositions	225
Odesta Publishing	128
Omega Microware	64
Orange Micro	116-117

Penguin Software	5,254
Personal Computer Products	74
Practical Peripherals	7
Professional Data Systems	36
Proforma Software	43
Prometheus Products	161
Quality Software	253
Quark Engineering	193
RH Electronics	55,235
Rainbow Computing	124,147,176
Satori Software	39
Sensible Software	83
Sierra On-Line	57,Cover 4
Silicon Valley Systems	175,177,179,181,183
Sirius Software	Cover 3
Sir-tech Software	247
Smith Micro Software	67
Softalk	32,219
Softdisk	44
SoftTech Microsystems	42
Softronics	152
Softstalker	54
Software by H	245
Software Dimensions	125
Software Masters	79
Software Productions	234
Software Publishing Corp.	170-171
Software Technology for Computers	226
Sorrento Valley	22
Southern California Research	130

Southwestern Data Systems	112,127,143,154
Spectrum Software	199
Spinnaker	12-15
SRA	101,103
SSM Microcomputer	131,133,135
SSR Corporation	211
Stoneware Incorporated	38,94
Strategic Simulations	252
Street Electronics	85
Strictly Soft Ware	229
Sweet Micro Systems	205
Syntauri	230
Systems Plus	63
TG Products	26
Tayco Business Forms	33
Thunderware	19
Touch Technology	187
Trace Systems	75
Ultrasoft	23,31
U-Microcomputers	111
Videx	88
Virtual Combinatics	201
VisiCorp	40-41
Visual Horizons	202
Voice Machine Communications	56
Wadsworth Electronic Publishing	167
Xerox Education Publications	102

Chairman John Haller
 Publisher Al Tommervik
 Editor Margot Comstock Tommervik
 Art Director Kurt A. Wahlnier
 Managing Editor Patricia Ryall
 Associate Editors Jean Varven
 David Hunter
 Andrew Christie
 Jonathan Miller
 Tommy Gear
 Matthew T. Yuen
 Reviews Editor Roe Adams
 Assistant Editor David Durkee
 Proofreaders Harry McNeil
 Betsy Barnes

Special Assignments
 Open Discussion Editor
 News and Trade Editor
 Reviews Editor
 Assistant Editor
 Proofreaders

Contributing Editors
Assembly Language Roger Wagner
Pascal Jim Merritt
Business Peter Olivieri
Apple CP/M Greg Tibbetts
Apple III Taylor Pohlman
Hardware Jeffrey Mazur
Applesoft Doug Carlston
Investing Kenneth Landis
DOS Bert Kersey
Graphics Mark Pelczarski
Financial Modeling Joe Shelton
Beginners Christopher U. Light
Basic Solutions William V. R. Smith
 Art Manager Kevin McKeon
 Art Production Don Robertson
 Art Assistants Michael G. Pender
 Roxanne Rogers
 Jill Schultz

Associate Publisher Mary Sue Rennells
 Director of Operations Three Tyler
 Accounting Evelyn Burke
 Accounting Assistants Mary Jo Milam
 Carla Swenson

Assistant to the Publisher Dan Yoder
 Dealer Sales Judy Weinstein
 Book Sales Lois Mencesik
 Advertising Coordinator Linda McGuire
 West Coast Sales Mike Antich

Softalk
 11160 McCormick Street
 Box 60
 North Hollywood, CA 91603
 (213) 980-5074

East Coast Sales Ian Ross
 Paul McGinnis
 Paul McGinnis Company
 60 East 42nd Street
 New York, NY 10017
 (212) 490-1021

Midwest and Rocky Mountain Sales Ted Rickard
 John Sienkiewicz
 John Bollweg
 Kevin Sullivan
 Market/Media Associates
 435 Locust Road
 Wilmette, IL 60091
 (312) 251-2541

Circulation Hal Schick
 Trial Subscriptions Deirdre Booth
 Laurie O'Connell
 Marsha Stewart

Paid Subscriptions Pam Kelley
 Connie Mastelotto
 I. K. Frasca
 Ron Rennells
 Pat Adams
 Harry Richardson
 Cliff Martinez

Back Issues Sam Pawley
 List Maintenance Dave Albert, Bill De Ville,
 Donald A. Dyer, Jock Root,
 Howard A. Shore,
 Richard S. Willing

Assistant Systems
 Guest Reviewers

Cover Photo: The Apple IIe rolls off the assembly line at Dallas Apple plant. Photo by Kurt Wahlnier.

Credits: Composition by Photographics, Hollywood, California. Printing by Volkmuth Printers, Saint Cloud, Minnesota.

Apple and Applesoft are registered trademarks of Apple Computer Inc., Cupertino, California. UCSD Pascal is a trademark of the University of California at San Diego. VisiCalc is a trademark of VisiCorp, San Jose, California. SoftCard is a trademark of Microsoft, Bellevue, Washington. GraForth is a trademark of Insoft Inc., Portland, Oregon.

Softalk, Volume 3, Number 6. Copyright © 1983 by Softalk Publishing Inc. All rights reserved. ISSN 0274-9629. Softalk is published monthly by Softalk Publishing Inc., 11160 McCormick Street, North Hollywood, California; telephone (213) 980-5074. Second-class postage paid at North Hollywood, California, and additional mailing offices.

Postmaster: Send address changes to Softalk, Box 60, North Hollywood, CA 91603.

Free Subscription: Complimentary trial subscription to all owners of Apple computers in the USA. If you own an Apple, but you've never received Softalk, send your name, address, and Apple serial number with a request for subscription to Softalk Circulation, Box 60, North Hollywood, CA 91603. Softalk is totally independent of Apple Computer Inc.; sending your warranty card to Apple Computer will not inform Softalk of your existence.

Paid Subscription: \$24 per year without sponsor, \$18 per year with sponsor. At the end of trial period, each subscriber will be notified; response is required only if you wish to continue receiving Softalk. Lack of response will be taken as your choice to discontinue the magazine. Special rates for schools and libraries, \$8; multiple subscriptions for schools and libraries, \$5 each.

Back Issues: \$2 through February 1981; \$2.50 through July 1981; \$3.50 through September 1982; \$4.00 thereafter. November and December 1980, January, February, March, September, October, and November 1981, and December 1982 are sold out. December 1981 and February and May 1982 are in short supply.

Problems? If you haven't received your Softalk by the fifteenth of the month, or if you have other problems with your subscription, Hal Schick or Pam Kelley can help out. Call (213) 980-5074.

Moving? Send new address and old to Softalk Circulation, Box 60, North Hollywood, CA 91603; telephone (213) 980-5074.

Contest:



So, you think you're smart, eh? Just because you can count turkeys or write short stories, you think you're pretty darn fancy stuff with these contests, don't you? Welcome to 1983, pal.

When February rolls around, everyone thinks of such mundane stuff as Valentine's Day, Lincoln's Birthday, Washington's Birthday, and so on. Looks like a real yawner of a month, no? Exchange valentines, take a day or two off from work, and get ready for March. Zzzzzz.

No longer. The Puns 'n' Anagrams contest on page 4 is designed to help you learn about what a great month February has been in the past. Did you know that on February 4, 1913, the demountable automobile tire was patented? Or that the first sardine was canned on February 17, 1876? Or that on February 22, 1630, the Indians treated the American colonists to their first batch of popcorn? Of course not! If you did, then you'd be working for Softalk digging up junk like this.

Whether or not you knew those tidbits of trivia isn't important. What is important is that once you complete this month's contest you'll have a whole bunch of facts, just like those previously mentioned, at your fingertips to impress people with at parties. (Probably the last party you'll ever get invited to, but you'll be a better person for it.)

The first part of the contest involves figuring out what the heck each clue refers to. It may be a person, a thing, or an event. All you have to do, then, is to write the answer in its appropriate spot in the crossword puzzle. The person with the most complete puzzle will be crowned Softalk Crossword Solver Supreme and will re-

ceive \$100 in booty made by our advertisers.

The second part involves more than just being clever, smart, or generally intelligent. It requires good research skills.

Once you have the answers to the crossword puzzle, find out what each one has to do with this exciting month of February, and when it happened. In other words, if the answer was "French prayer," then you would immediately remember that the French people were granted the freedom of worship on February 21, 1795. You remember? Good. Then you write a brief description of it and the date it took place. That shouldn't be too hard; after all, so much happened during this month in history that you'll have a hard time deciding where to start.

Whoever compiles the most complete list of explanations and dates will win a bonus prize of \$100 in Apple accessories. Sound simple? You bet it is; we wanted to give you extra time to send us Valentine's Day cards.

And, because this contest is so simple, we're only going to accept the first fifty thousand entries we receive with postmarks on or before March 15, 1983. So get to work, and have (heh, heh) fun.

Mail in your entry with this coupon or a facsimile to: Softalk Dates, Box 60, North Hollywood, CA 91603, postmarked no later than March 15, 1983.

Hello, my name is: _____
 And I live at: _____
 My city and state: _____
 Phone me at: _____
 Gee, I'd like to win: _____
 Here's my autograph: _____

The answer to the trivia question on page 132 is John F. Kennedy—and even that depends on the definition of "naval hero."

Makers of Raster Blaster
winner of the Softalk
Award for most popular
program of 1981.

The First Software Toy



BudgeCo announces The Pinball Construction Set, the first entertainment software that has the simplicity and freedom of interaction of a toy. You don't use this program—you play with it.

The Pinball Construction Set allows you to build your own video pinball games by providing a library of conventional (and unconventional) pinball pieces and a set of video tools.



Use the video hand to put library pieces on the game board—as many as you want, where you want them.

Use the polygon tools to make borders and obstacles.



Add game logic and scoring rules with the wiring kit.



Create hi-res designs and logos using the BudgeCo magnifier and paintbrush.



Change gravity, time, elasticity and bumper strength.

Load and save designs to/from disk.



BudgeCo

Available for the Apple II®
Suggested retail price \$39.95

428 Pala Ave.
Piedmont, CA
94611 415-658-8141

Krell's College Board SAT* Preparation Series NEW FOR 83

A COMPREHENSIVE PREPARATION
PACKAGE / MORE THAN 40 PROGRAMS / \$299.95

1. Diagnostic analysis
2. Prescription of individual study plans
3. Coverage of all SAT* skills
4. Unlimited drill and practice
5. SAT* Exam Question simulator
6. All questions in SAT* format and at SAT* difficulty level
7. Instantaneous answers, explanations and scoring for problems
8. Worksheet generation and performance monitoring - (optional)
9. A complete record management system - (optional)
10. Systematic instruction in pertinent math, verbal and test taking skills - (optional)

Krell's unique logical design provides personalized instruction for each student according to individual needs.

APPLE, ATARI, COMMODORE, CBM/PET,
CP/M, I.B.M., RADIO SHACK TRS-80

LOGO \$99

NO FRILLS PAK

1. Two copies of Krell's LOGO for Apple II*
 2. Utility Disk with M.I.T.'s valuable demo programs including Dynatrack
 3. The official M.I.T. technical manual: LOGO FOR APPLE II by H. Abelson & L. Klotz
- No Frills Turtle Price **\$99.00**

FRILLS FOR LOGO \$99.95

FRILLS FOR LOGO / Support Pak for:
M.I.T. LOGO, KRELL & TERRAPIN INC.

1. Krell Utility Disk
2. Alice in LOGOLAND
3. LOGO for Apple II - by H. Abelson
4. Alice in Logoland Primer
5. Comprehensive wall chart
6. LOGO & Educational Computing Journal

NO FRILLS LOGO and ALL THE FRILLS COMBO FOR APPLE II* **\$159.95**

SPRITES NOW AVAILABLE FOR APPLE* and TRS-80*

☆☆☆ Call For Information ☆☆☆

ALSO AVAILABLE

Time Traveler / Odyssey in Time
Competency Proficiency Series
Pythagoras and the Dragon
Isaac and F.G. Newton / Micro Deutsch
Super Star Baseball / Sword of Zedek
Krell Game Pak

CALL FOR DETAILS AND PRICES

KRELL®

SOFTWARE CORP.

The state of the art in educational computing
1320 Stony Brook Road / Stony Brook, NY 11790
Telephone 516-751-5139

Krell Software Corp. has no official ties with the College Entrance Examination Board or the Educational Testing Service. Krell is, however, a supplier of products to the E.T.S.

*Trademarks of Apple Comp. Corp., Tandy Corp., Commodore Corp., Digilab Research Corp., I.B.M., Atari Corp., Terraglin Inc.

Socrates Chess Corp.
N.Y.S. residents add sales tax

Prices slightly higher outside U.S.

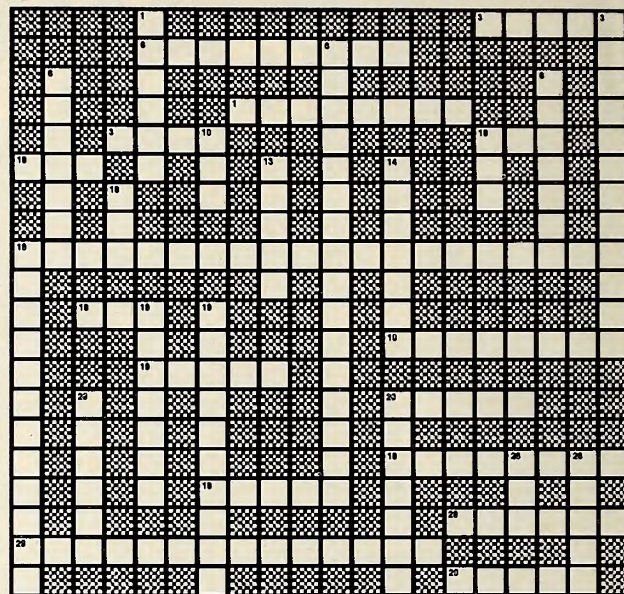
Across

2. Is mutiny retarded when evil brother shows tuby computer?
4. Spinning instrument with blank isn't game; bell top cat strangely without annex for stopper.
8. A thousand odd calm lox cheered Muslim leader to the end.
9. Darn! Objective author turned to sci-fi.
11. In the beginning, games and puzzles only sound like male institution.
12. Within Bali, Zanzibar, and Pago Pago, you're bound to find a most beautiful woman.
16. City and planet in fear: what's shakin'?
17. Younger brother in Foggybottom shouldn't be in debt; it's backward.
20. The Baptist leader of the reconstruction found little help in one child.
21. Len\$ n.g. for man modeled on Tom Corbett.
23. Icy maker twists by, likes to swat a wasp.
24. German tourist on mixed up bus yawns, "Why no essen rapid transit?" Begin by initting city.
27. Remember, the whole nation follows a ship swerving around a mine.
28. "Not I, again" stated the old-time cowboy; but it was politic, in an Eastern.
29. Under strange U.N. allegation, e.a., you find countrywide association for taxed dodgers.
30. "O, tulips" isn't orange dog's favorite planet.

Down

1. Able baker ripoff—no eyes for wandering ASCII. Bam!
3. Oddly, seven years ago, a chic woman met a group of protestors, which upset the processes of the nation.
5. The rooster hurried, and Pat or Dan'l found some inventors with a very tiny potato flake.

Contest



6. La jeune fille Langtry, sharing space with MGM's lion, became an old astronomer.
7. Iowa Jim was crazy, but he shared the Marines' great victory. Raise the flag!
10. Take a shot at kids: Cool off, don't cough, and keep your jaw loose.
11. A pig in a bog. No, a pog in a big. No, a big in a pog. No. Oh, rats; invite elephants to the party instead.
13. In a messy field, but faithful, he's first in cigars.
14. Don't forget to identify Flora—or she'll be in a real state.
15. Turn around for the start of the Ascot Gavotte. Have a dixie cup shortly and watch the rebels.
16. This cold is incurable you say? That line is appalling. The scientist

suggested vitamin C.

18. Watch the dogwood; for mid\$(tree\$,2,1) = "a": sandwiches, blondes, and bums instead of the funnies.
19. Popeye did fine with twenty-four-hours' leave, mais non, Freddy and Moe screwed up.
22. When you hear her story, do a pattycake and the kid'll take her nap.
23. Cutting the C but not the K brings royal tongue-clucking from British mother, formerly young monarch.
25. Short lad and many Tontos prepared our country for youthful troops and dens of iniquity.
26. If you have a doubt, crock it. Remember the mission: first, brief Louisiana and Missouri. Begin battle.

Tips on Solving Puns 'n' Anagrams

Puzzles. If you were to travel the world collecting all the kind and thoughtful things you could, puns 'n' anagrams puzzles would not be among your souvenirs. In fact, these puzzles are downright mean, out to twist your mind and stump you at every turn. For example, pay no attention to the punctuation of the clues. It's intentionally not at all nice.

Each clue actually contains at least two clues: a real definition of the word and a puzzle-type clue. Puzzle-type clues often have tip-off words you should watch for. Here are some types of puzzles and their tip-offs:

Puns: tip-off is reference to sound, hearing; listen.

Anagrams: tip-off is reference to strangeness, confusion, being mixed up or stirred.

Reversals: tip-off is reference to reversal, back, turn around.

Hidden words: watch for prepositions *in*,

within; inside.

Containers: similar tip-offs as for hidden words. For example, "club in short red pismire" could mean *combatant*—short red, or communist = *com*, pismire = *ant*, club = *bat*; put *bat* in *comant* and get the answer.

Beheadings (either take the word left after beheading or the initials; beheading *stable* could render *table* or *s*): tip-offs are references to small size or duration; briefly, short, small.

Double definitions: no tip-off; example would be "It's not true that I go to bed early" for *lie*.

Charades: no tip-off; the clues define parts of the definition or syllables of the answer; for instance, *Baryshnikov* could be defined as "sounds like [tip-off—answer is pun] bull-less market [*bearish*] drove ballet dancer [real definition] to leggy joint [*knee*] with respiratory spasm [*cough*]."

Let your imaginations run wild—at least, outside the square. Have fun. ☐

Penguin Graphics Software

Which is for you?

The Complete Graphics System II

by Mark Pelczarski

Complete Graphics System is written for the non-programmer interested in doing a wide variety of graphics and design on the Apple computer. Included are options for two-dimensional drawing, with lines, circles, ellipses, and an automatic 108-color filling routine. Also, you can mix text with graphics, with various colors, sizes, and spacing, and easily create Apple shape tables. Three-dimensional options allow you to draw, edit, and manipulate 3-D objects in perspective—without having to use coordinates. A 2-disk set of additional text fonts is available separately.

Special Effects

by Mark Pelczarski and David Lubar

This is also a non-programmer's package, but oriented more toward computer artistry. It's also an ideal complement to *The Complete Graphics System II*. It has a brush module that lets you "paint" using a joystick or Apple Graphics Tablet, with the screen as your canvas and a choice of 96 "brushes" and 108 blended colors. You can also magnify any portion of the screen 2 or 4 times for detail editing, perform mirror images, exchange colors, and move parts of pictures to other areas of the screen. Also included is a packing routine that lets you store more pictures on each disk.

Although both *Complete Graphics System II* and *Special Effects* are written for non-programmers, they are provided on unprotected disks, and instructions are included for using the graphics and machine language routines in your own programs.

The Graphics Magician

by David Lubar, Mark Pelczarski,
and Chris Jochumson

This one is written with the programmer in mind; for anyone who wants to put professional quality graphics in their own software. Fast machine language animation and picture drawing routines are included for use in your own programs, and they're extremely easy to use. Using the editors provided, you simply draw your own multicolored shapes, draw their paths, and combine up to 32 independent shapes with paths and starting locations. The result is a machine language animation file that you just add and control with your own program—it does all the graphics work for you! The adventure-game picture editor works the same way: just draw, save, and add the redraw routine to your program. It increases a disk's storage capacity from 12 pictures to hundreds. A tutorial manual is included with examples of controlling animated objects with joysticks, detecting collisions, and a multitude of other useful hints and examples. For samples of what can be done, see any of our game packages, including *PIE MAN*, *Transylvania*, and *Spy's Demise*, as well as those from several other companies using *Graphics Magician* for the graphics in their software.

All of our graphics products are on unprotected disks for your convenience.

No fee is required for using our graphics routines in other programs. All our license requires is that it is stated that our graphics routines were used. We are also most interested in publishing good, new products, and beyond our graphics software we can offer further help to authors publishing through Penguin Software.

Instead of offering our own superlatives, we recommend that you read what others have said about our graphics products. Listed here are some of the reviews we've found, along with a few quotable quotes:

Graphics Magician

"recommended to anyone wanting to work with Apple's high resolution graphics for whatever purpose...definitely a program Apple users should have in their software library", *Byte*, Nov. 82.

"miraculous and marvelous," *Creative Computing*, Jan. 83.

"makes a graphics magician out of each and every Apple user", *Softline*, May 82.

Other reviews: *Peelings II*, Sept-Oct 82. *Softtalk*, May 82.

Complete Graphics System II

"The program earns its name...it brings together at a modest price so many different graphics tools.", *Softtalk*, July 81.

"The three-dimensional utilities verge on the phenomenal", *Creative Computing*, June 81.

"provides capabilities that go beyond the wishful-thinking stage and painlessly use much of the Apple II graphics potential", *Infoworld*, March 1, 1982.

Other reviews: *Softside*, #33. *Peelings II*, Nov-Dec 81. *Cider Press*, Sept-Oct 82. *Call-A.P.P.L.E.*, Nov 82

Special Effects

"With *Special Effects*...the Apple computer comes very close to emulating main-frame computer graphics systems costing as much as \$250,000 for only \$39.95", *Creative Computing*, July 82.

"If you can afford only one computer graphics package, this (*Complete Graphics System*/*Special Effects* combination) is the one to buy", *SoftSide*, #33.

Other reviews: *Popular Science*, Nov 82. *Softtalk* and *Peelings II*, March 82. *Cider Press*, Sept-Oct 82.



penguin software
the graphics people

830 4th Avenue, Geneva, IL 60134 (312) 232-1984



Here's Steve Toth of Gemini Computer (Piscataway, NJ) presenting checks to Mary "Art Gallery" Ciccolella and her husband, Oracle '82 Part 4 winner Jack English. Both teamed up to purchase the Voice Box from the Alien Group.

CONTEST WINNERS

Nothing used to surprise the *Softalk* contest staff. When a ragtag team of underdog American ice hockey players upset the Soviet team in the 1980 Winter Olympics, and went on to win the gold medal, we believed it. When the University of California football team scored the winning touchdown on a rugby-style kick-

off return with no time left in last year's California-Stanford Big Game, we believed it. But when we saw the final results of the Oracle '82 contest, we said, "Yeah, sure. Tell us another one."

Softalk Oracle's Believe It or Else. That Elizabeth Lewis (Richmond, VA) correctly predicted in order the top three companies to make the most appearances in *Softalk's* Top Thirty bestsellers list is not surprising—anyone could have done it. But no one else did. Lewis picked Apple Computer, Broderbund Software, and VisiCorp (then Personal Software) to finish first, second, and third respectively, and she was exactly right.

In 1982, Apple had thirty-nine Top Thirty appearances, Broderbund had thirty-eight, and VisiCorp netted thirty-four. Following closely behind were Sierra On-Line with thirty-three and Software Publishing Corporation with twenty-three. No big surprises there.

The part that surprised us was that Lewis was also the winner of the first part of the Oracle '82 contest, predicting the Nielsen rating for the 1982 Super Bowl. Wow! A two-time winner in one contest was enough to blow us out the door. But here's where it gets really good.

After figuring out everyone's scores for the final part of the contest, we tabulated the total scores for the entire contest. We showed the results to Mr. Ripley, and he said, "I don't believe it."

You see, the grand prize winner of the Oracle '82 contest is Charles Lewis (Richmond, VA), Elizabeth's husband. Charles's final score was enough to blow everyone else away, and win him a shiny new Disk II drive.

The secret of the Team Lewis's success is that both Elizabeth and Charles work in libraries; she at the Virginia State Library and he at the J. Sargeant and Reynolds Community

College Library. With the world's resources at your fingertips, you just can't go wrong. And if you thought the Lewises were brutal in last year's Oracle, keep looking for them this year in these pages. They want to win that new computer bad!

Instant Replay. It all began back in January of 1982. Charles predicted the Nielsen rating for the Super Bowl to be 47.5. He was a mere 1.6 off the mark of 49.1. Elizabeth Lewis hit it right on the money. Next, Charles foresaw snow falling on Manhattan Island for seven days between Groundhog Day and the first day of spring. He was short by only five days. The closing price of gold on the New York market the day after Labor Day was \$481, a slim dollar above Charles's prediction.

The Major Leagues provided us with not a single no-hitter, just as Charles told us. After the November elections were over, Charles had slipped back thirty-four points. His prediction of the number of Democrats and Republicans in Congress missed by seventeen in each party. And, finally, Charles predicted Apple, Sierra On-Line, and VisiCorp to finish as the three most frequently appearing companies in *Softalk's* Bestsellers, getting two of three, in their respective places, for plus-seventeen points. Grand total, -24.6 points.

Coming in second place was Jack Wilcox (Lafayette, CA), who was hot on Lewis's tail with a score of -32.9 points.

And Liz? She finished sixth in a field too



Delores Ehrline of Jonathan's Apple (Marlton, NJ) hands over the loot to John Morrison, who splurged on *Arcade Machine* and *Spy's Demise*.

large to count. Even though she won two parts and tied for first place in the no-hitter segment, Elizabeth lost most of her ground in predicting the price of gold and in November's great congressmen count.

Her real clairvoyance came through quite some time ago. She knew enough to predict a winner—and marry him.

Turkey Heads, Eat Them Up, Yum. Thanks are due to all of you who helped us round up our stray turkeys in the November issue. The correct number of hi-res gobblers was three hundred forty-nine, just enough for our hungry staff (we like to eat in large quantities).

A special thanks goes to Carl Heimowitz (New York, NY), who is the winner of this counting contest. Several others also found all the turkeys in the magazine, but the Random

GOTO 115



APPLE BUNNY—Another innovative product from Accessory Products Company. The **APPLE BUNNY** will enhance your Apple II* or II+ keyboard. Now you can have each key with its own auto repeat. No more two finger repeat. Just hold down any alpha or numeric key and after a 3/4 second delay the key will automatically repeat.

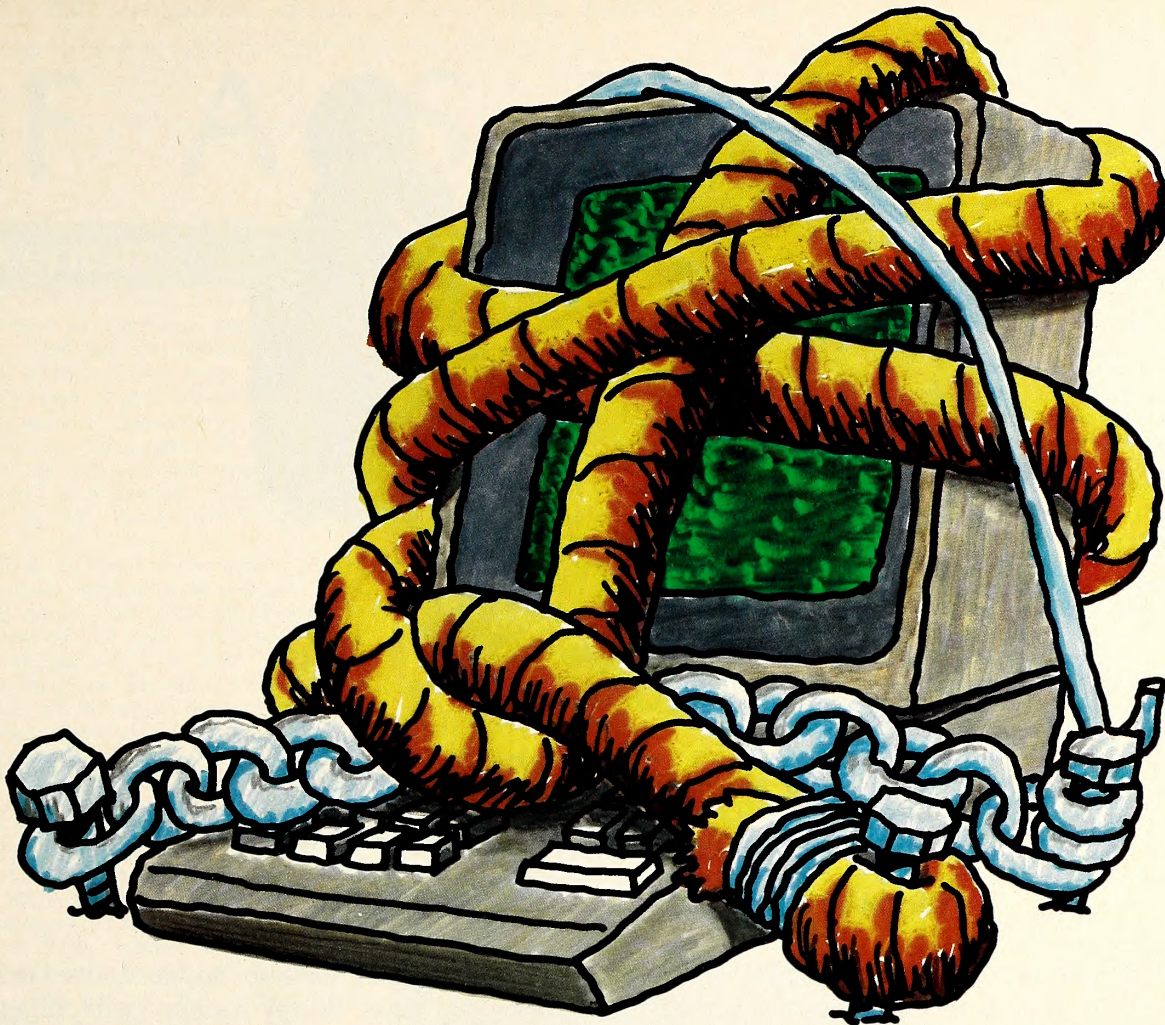
APPLE BUNNY requires no wires or soldering. Just open the top lid and snap on. Installation in seconds. Can be turned ON or OFF from the main keyboard—press CTRL/SHIFT to toggle the **APPLE BUNNY** ON or OFF. Works terrific with VisiCalc†. For such a low price no Apple Computer should be without one.

See your local
authorized dealer
today!

\$24.95

ACCESSORY PRODUCTS COMPANY
4542 Palm Avenue, Yorba Linda, CA 92628
714/970-2031

*Apple II, APPLE II+ and Apple Computer are registered trademarks of Apple Computer, Inc.
†VisiCalc is a registered trademark of VisiCorp.



ARE YOU STILL LETTING YOUR PRINTER TIE UP YOUR COMPUTER?

While your printer is running, your computer is tied up. You can't use it for processing, computing, data entry. Nothing. All you *can* do is twiddle your thumbs until the program is finished.

Pretty ridiculous.

MICROBUFFER ALLOWS YOU TO PRINT AND PROCESS SIMULTANEOUSLY.

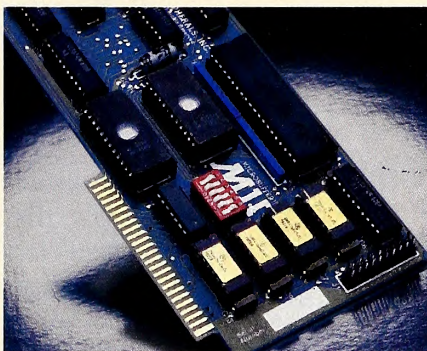
You just dump your printing data directly to Microbuffer, whoosh!, and continue processing. No waiting.

Microbuffer accepts data as fast as your computer can send it. It stores the data in its own memory buffer then takes control of your printer.

It's that easy.

THERE IS A MICROBUFFER ESPECIALLY FOR YOUR APPLE.

Microbuffer II (just one in the full line of Microbuffers) is designed to be specifically compatible with an Apple II



computer. An intelligent interface card with up to 32K of RAM for data buffering, Microbuffer II features on-board firmware for text formatting and advanced graphics dump routines. Both serial and parallel models have energy-efficient low power consumption coupled with a high data transfer rate. Print formatting functions include Basic listing formatter, self-test, buffer zap, text screen dump, fully programmable control characters and transparent and maintain modes —

to name only a few.

Microbuffer II is simple to install — being slot-independent, it slips directly inside the Apple II in any slot except zero. The 16K model is priced at \$259 and the 32K, at \$299.

Other Microbuffer models include Microbuffer/E for Epson printers and a stand-alone, in-line Microbuffer unit to untie virtually any computer/printer combination.

MICROBUFFER FROM PRACTICAL PERIPHERALS.

So what are you waiting for? Write to us for more information or ask your dealer for a demonstration.

When you see how much freedom Microbuffer will allow, you'll understand why it's so silly to be without one.

PRACTICAL PERIPHERALS, INC.™
31245 LA BAYA DRIVE
WESTLAKE VILLAGE, CA 91362
(213) 991-8200

MICROBUFFER FREES COMPUTERS.



To Do It Right.

To make a Winchester disk for just Apple®II.

That's how we set out to design our hard disk for the Apple®II. To understand the needs of serious users and programmers, and to correct the errors of our predecessors.

You want user-friendliness. So we wrote hard disk versions of Apple DOS, CP/M® and Pascal that are highly user-friendly and loaded with useful features.

- ☐ Auto-boot hard disk
- ☐ Menu-driven utilities
- ☐ Single-keystroke program execution in DOS
- ☐ Disk search with wild cards, and many more

You want flexibility. So we made every feature variable.

- ☐ From 1 to 16 operating systems on each disk
- ☐ Operating system spaces grow as needed
- ☐ Slot independence
- ☐ Variable size volumes (to 400K in DOS)
- ☐ Mountable and unmountable volumes (even in CP/M)
- ☐ Custom DOS allowed

You want reliability. We use the leading drive. And Corona's unique data protection technology.

- ☐ DataGuard™ 32-bit error correction code
- ☐ FailSafe™ read-after-write and automatic bad-sector reallocation
- ☐ 2-level impact-protection packaging

You want low-cost backup. So we wrote backup utilities that make floppy backup convenient.

- ☐ File compacting to reduce the number of floppies
- ☐ Volume selective backup in all operating systems
- ☐ Automatic diskette sequencing to ease floppy handling

You want compatibility. We maximize compatibility with existing software and peripheral cards.

- ☐ 9K interface card leaves main memory untouched
- ☐ Interrupts are allowed
- ☐ Boot protected floppies from slot 6 without removing hard disk
- ☐ Automatic slot/drive to hard disk remapping

And you want support. We do that right too.

- ☐ Hardware depot service in every region
- ☐ Software theft-protection on the hard disk

Compare the features that matter to you. And visit our local dealer or distributor for a demonstration. You'll see the difference specialization makes.

Corona Starfire™ — The Winchester Disk for Apple II

~~\$2495~~ / 5 MB ~~\$2995~~ / 10 MB
(All software included. Pascal not needed for CP/M.)

\$2195

\$2695



corona™

The Third Generation Microcomputer Company

F A S T A L K

Adventure

● **Adventure.** Crowther, Woods. The original text adventure, created on mainframe, contributed to by many over a long time. Very logical within fantasy framework, excellent puzzles, maps; complex, convoluted, and great. Several publishers.

Ali Baba and the Forty Thieves. Smith. Fanciful Arabian Nights role-playing game with a sense of humor. Fresh, fast action, challenging options, and secrets that are a joy to discover. Quality, 6660 Reseda Blvd., Ste. 105, Reseda, CA 91335. \$32.95. 11/82.

Deadline. Blank, Lebling. Episode one in a projected series of murder mysteries by the authors of *Zork*. Interrogate, accuse, make transcripts. Includes inspector's casebook, lab report. Infocom, 55 Wheeler St., Cambridge, MA 02138. \$49.95. 8/82.

Escape from Rungistan. Blauschild. A vacation with a vengeance. Get out of jail; battle snakes, bears, and cannibals; acquire skills to get your money refunded. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. \$29.95. 8/82.

● **Hi-Res Adventure #1: Mystery House.** Williams. Whodunit in a Victorian mansion. First adventure with pictures. Vocabulary of more than 300 words. Sierra On-Line, 36575 Mudge Ranch Rd., Coarsegold, CA 93614. \$24.95.

Hi-Res Adventure #2: The Wizard and the Princess. Williams, Williams. Attempt to rescue princess from vengeful wizard. Features 250 illustrations in full color. Sierra On-Line, 36575 Mudge Ranch Rd., Coarsegold, CA 93614. \$32.95. 11/80.

Kabul Spy. Wilson. Cold War espionage adventure in which you must slip into Afghanistan to rescue a physicist before the commies make him talk. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. \$34.95.

Mask of the Sun. A unique animated graphic quest with unusual full parsing. See everywhere you can go as you travel, watch things transform. A professional-looking graphics breakthrough with nice puzzles. Ultrasoft, 24001 S.E. 103rd St., Issaquah, WA 98027. \$39.95. 11/82.

Prism. A forty thousand dollar, real-life treasure hunt that's also a game. Solve the riddles and puzzles and find the clues to the location of three gold keys actually buried in the continental U.S. International Software Marketing, 120 E. Washington St., Ste. 421, Syracuse, NY 13202. \$19.95. 11/82.

● **Prisoner 2.** Mullich. Totally relandscaped but loyal version of original game: full-color hi-res graphics added, puzzles reworded, obstacles expanded. Sophisticated and difficult exercise in intimidation with elements of satire. Escape from an island requires player to solve logical puzzles, overcome obstacles, and answer riddles. Excellent computer fare; nothing else like it. Edu-Ware, Box 22222, Agoura, CA 91301. \$32.95. *The Prisoner*, 3/81; *Prisoner 2*, 10/82.

● **S.A.G.A. Series.** Adams. Scott Adams's prototypical adventures—twelve in all—spruced up with 100-color graphics and Votrax vocals. Fun, not always logical, very story-oriented series. First to make chance a significant element of play (you can get killed a lot). Each adventure has its own theme; you do a lot of exotic traveling. They map small but score big on imagination. Adventure Intl., Box 3435, Longwood, FL 32750. \$29.95 each.

Sherwood Forest. Holle, Johnson. Dating game in legendary times. In premiere Sof-toon adventure featuring neat UltraRes graphics, Robin Hood woos Maid Marian all the way to the honeymoon.

Go for it. Phoenix Software, 64 Lake Zurich Dr., Lake Zurich, IL 60047. \$34.95.

Starcross. Science fiction prose adventure that comes wrapped in a flying saucer. In the year 2186, your mission to harness a black hole takes some unexpected turns. Likable, engaging. Infocom, 55 Wheeler St., Cambridge, MA 02138. \$39.95. 11/82.

Time Zone. Williams, Williams. "Microepic" hi-res adventure featuring ten periods from past and future history all over world and universe on eight double-sided disks. Good puzzles, many dangers. Sierra On-Line, 36575 Mudge Ranch Rd., Coarsegold, CA 93614. \$99.95. 1/82.

Transylvania. Antiochia. Best graphics ever in a hi-res adventure. Excellent puzzles and logic—no tricks. Enjoyable. Penguin, 830 4th Ave., Geneva, IL 60134. \$34.95. 10/82.

Zork I. Lebling, Blank. Part one of mainframe adventure; understands complete compound sentences and questions. Simultaneous manipulation of objects. Text. Infocom, 55 Wheeler St., Cambridge, MA 02138. \$39.95. 6/81.

Zork II. Lebling, Blank. *Zork* comes into its own in sequence. Great text adventure technique and communication. Infocom, 55 Wheeler St., Cambridge, MA 02138. \$39.95. 3/82.

Zork III. Lebling, Blank. Text lives! A masterpiece of logic and a grand adventure to revel in. Hard, logical puzzle with unique point system. Infocom, 55 Wheeler St., Cambridge, MA 02138. \$39.95. 9/82.

Business

Accounting Plus II. Software Dimensions. Integrated package: general ledger, accounts receivable and payable, and inventory-purchasing modules. Basic and machine language. Menu-driven; prompting. Systems Plus, 1120 San Antonio, Palo Alto, CA 94303. \$1,250.

Accounting Plus IIe. Stripped and rebuilt to take advantage of all IIe functions. Systems Plus, 1120 San Antonio, Palo Alto, CA 94303. General ledger, \$450; accounts receivable and payable, \$350 each; package, \$995.

Apple II Business Graphics. Converts numerical data into a variety of charts and graphs. Features mathematical and statistical functions. Requires language card. Apple, 20525 Mariani Ave., Cupertino, CA 95104. \$175.

BPI System. Popular five-module business package; programs also available separately. Includes general ledger (a bestseller), accounts receivable, accounts payable, payroll, inventory control, and job costing. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$395 each. Job costing: \$595.

Computer Programmed Accountant. Five-module package: general ledger (very popular), accounts receivable, accounts payable, payroll, and property management. All other modules post automatically to general ledger. Continental, 11223 S. Hindry Ave., Los Angeles, CA 90045. \$1,495. Separate modules: \$250 each. Property management: \$495.

Condor Series 20. Relational database management system that supports transaction processing, generating audit trail for each posted transaction. Complete batch operation; 127 fields per record, 32,700 records per file. Requires Z-80 card and eighty-column card. Condor Computer, 2051 S. State St., Ann Arbor, MI 48104. File manager, \$295. Full system, \$650. 7/82.

The Data Factory. Passauer. Database management system allows listing files, getting file statistics, se-

lecting another file, transferring records to new database, and adding fields to update forms. Disk swapping required; excellent product overall. Several compatible products available. Micro Lab, 2310 Skokie Valley Rd., Highland Park, IL 60035. \$150. 8/81.

dBase II. Speedy relational database management system. Requires SoftCard. Ashton-Tate, 9929 W. Jefferson Blvd., Culver City, CA 90230. \$700.

DB Master. Comprehensive database management system with password protection, extensive report creation options. Up to 1,020 characters per record. Stoneware, 50 Belvedere St., San Rafael, CA 94901. \$229. 10/81.

1st Class Mail. Schoenburg, Pollack. Fantastically user-friendly program for specialized database applications. Twelve fields, ability to sort and filter on any field or combination. Continental, 11223 S. Hindry Ave., Los Angeles, CA 90045. \$74.95. 6/82.

The Incredible Jack. Word processor, database, and spreadsheet in one, plus mailing label print and sort. Gives eighty-column and upper and lower case on the IIe. Requires 16K card for II Plus. Business Solutions, 60 E. Main St., Kings Park, NY 11754. \$79.

List Handler. List-lover's delight. Prints lists, labels, and letters. Handles up to 3,000 records per disk and eight disk drives. Takes requests. Silicon Valley Systems, 1625 El Camino Real, Ste. 4, Belmont, CA 94002. \$89.95.

Market Analyst. Investment analysis package with portfolio management, technical analysis, and telecommunications capability. 64K. Anidata, 613 Jaeger Ct., Sicklerville, NJ 08081. \$395.

Multiplan. Easy-to-learn electronic work sheet using plain English commands. Powerful modeling and presentation capabilities. For use in analysis, forecasting, technical engineering, and the home. Versions 1.04 and up use eighty columns and extended memory of the IIe. Microsoft, 10700 Northup Wy., Bellevue, WA 98004. \$275.

PFS:File. Page, Roberts. User controls data in totally unstructured database. Up to thirty-two pages (screens) of information in each record. IIe version has 80 columns, u&lc. Software Publishing, 1901 Landings Dr., Mountain View, CA 94043. \$175. 10/80.

PFS:Graph. Chin, Hill. Works alone or interfaces with files created with *PFS:File* and *VisiCalc*. Produces bar, line, and pie charts merging data from several sources. Eighty columns and increased graphics support in IIe version. Software Publishing, 1901 Landings Dr., Mountain View, CA 94043. \$125; Apple III: \$175. 5/82.

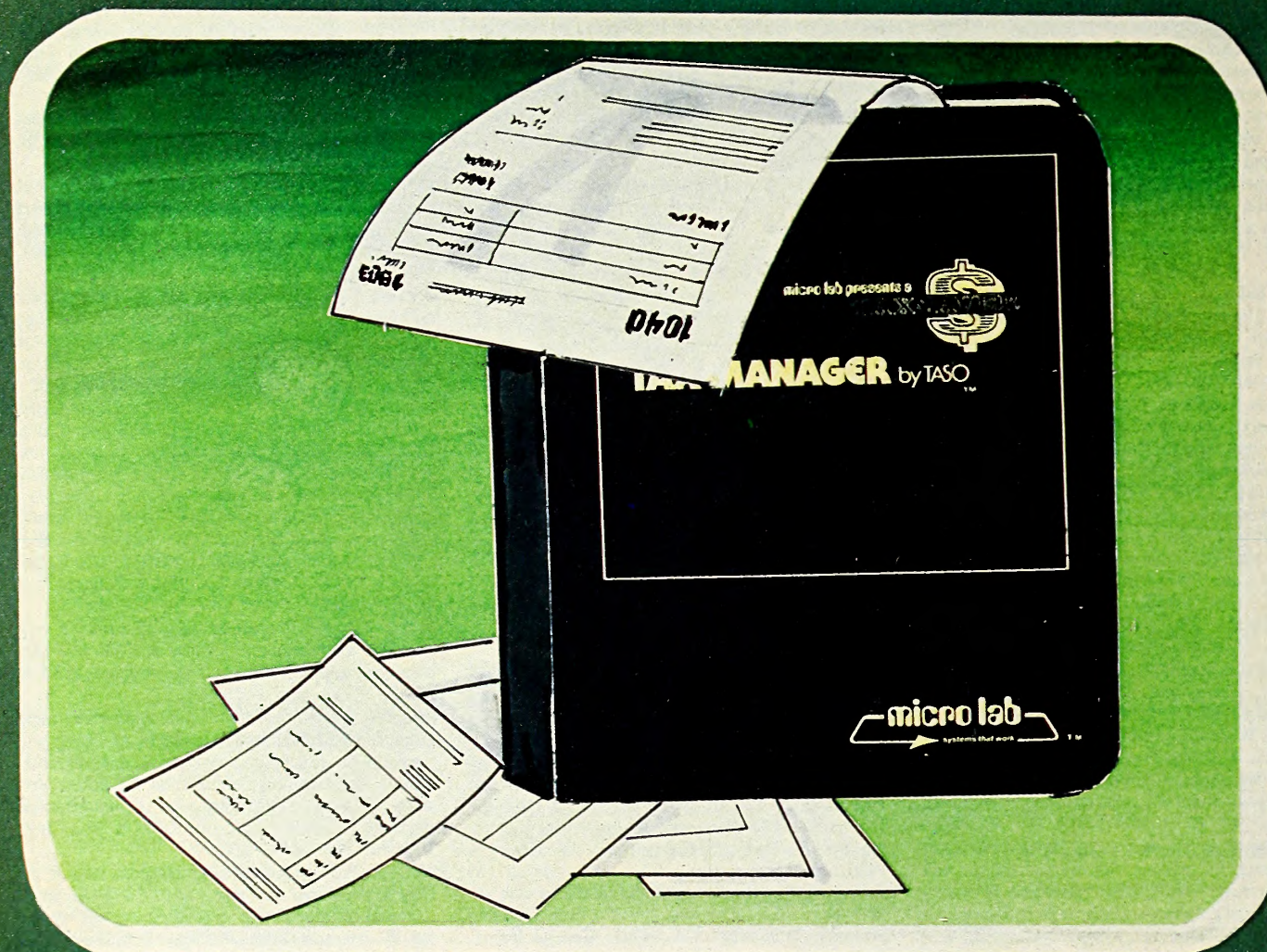
PFS:Report. Page. Powerful report generator designed for use with *PFS:File*. Software Publishing, 1901 Landings Dr., Mountain View, CA 94043. \$95; Apple III: \$125. 6/81.

State of the Art General Ledger and Budget and Forecasting Module. The ledger does twelve-period accounting, two-digit subaccounts; handles up to 470 accounts; enter 100 transactions before updating to permanent files. Budget module extends the account number to nine digits; custom designs reports; does previous year comparisons and two, four, twelve, and thirteen period accounting. State of the Art, 3183A Airway Ave., Costa Mesa, CA 92626. \$495; budget module: \$395.

Stock Market Advance Decline Timing Program. Altman. It won't tell you what stocks to buy, only when to buy them. Buy/sell recommendations on both short and intermediate term. Defines change in direction of advance/decline line. Dr. R. Altman, Box 1197, Hightstown, NJ 08520. \$149.

VC-Expand/80. Get 80-column *VisiCalc* display;

Now your Apple or IBM can
give you complete income tax
planning and record keeping!



And **TAX-MANAGER™**
from Micro Lab lets your
Apple II or IBM prepare
your return—and most
schedules—the easiest,
tax-saving way...and it's
deductible!

- Saves hours of time and effort in tax preparation for individuals and unincorporated businesses.
- Reminds you to take advantage of all deductions.
- Easy to use, even if you've had little computer experience.
- It's "global"—make a change in one figure and all other related figures are automatically changed on the return.
- Automatically selects the tax method/computation that saves you the most.
- FREE one-year Extended Warranty replaces blown disks and gives you updated versions at no cost.

It's Tax Deductible!

AND AVAILABLE NOW...Floppy Disk Version

TAX-MANAGER™

another fine product from



2310 Skokie Valley Road
Highland Park, Illinois 60035
(312) 433-7550

Communications

works with Videx 80-column card; expands memory to 128K. Upgrade from previous *VC-Expand* for only \$25. Saturn, Box 8050, Ann Arbor, MI 48107. \$125.

VersaForm. Business forms generator for invoicing, mailing lists, sales analysis, inventory. Hard disk compatible. Applied Software Technology, 14125 Capri Dr., Los Gatos, CA 95030. \$389. 6/82.

Videx Preboot VisiCalc. Run *VisiCalc* in 80-columns with upper and lower case; see complex formulas in their entirety. Advanced version uses mixture of existing memory cards. Vides, 897 N.W. Grant St., Corvallis, OR 97330. \$49. Advanced: \$89.

• **VisiCalc.** Bricklin, Frankston. Electronic worksheet for any problem involving numbers, rows, and columns. No programming necessary. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. \$250. 10/80.

VisiCalc Business Forecasting Model. Seven inter-related Visi templates that provide you with financial information most vital to analysis and planning: income statements, balance sheets, statements of cash flow, and so on. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. \$100.

VisiFile. Creative Computer, Jameson, Herman. Database management system for organization and retrieval of information, allowing sort and modification of records. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. \$250.

VisiSchedule. Critical path PERT schedule planner. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. \$300.

VisiTrend/VisiPlot. Kapor. Combines *VisiPlot* graphics with time-series manipulation, trend forecasting, and descriptive statistics. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. \$259.95. 7/81.

Wall Streeter. Collection of stock analysis and management programs that track price, Dow Jones, indices, and advances and declines. Calculates and charts same. Micro Lab, 2310 Skokie Valley Rd., Highland Park, IL 60035. \$300.

ASCII Express II. Blue. Modem software provides automatic redial, individual macro files, and improved file transfer capabilities. Sends any DOS file; uploads one character or one line at a time. Included utilities convert Integer Basic, Applesoft, or binary programs into text files. Southwestern Data, 10761-E Woodside Ave., Santee, CA 92071. \$79.95. 9/81.

ASCII Express: The Professional. Robbins, Blue. Greatly improved version of the original. Supports multiplicity of hardware and prints simultaneously. Southwestern Data, 10761-E Woodside Ave., Santee, CA 92071. \$129.95. 12/82.

Data Capture 4.0. Copyable, modifiable smart terminal program; compatible with Apple III and most lower-case adapters. Southeastern Software, 6414 Derbyshire Dr., New Orleans, LA 70126. \$65.

Dow Jones Connector. Guide to the use of the company's news retrieval service and Blue Chip membership, too. Dow Jones Software, Box 300, Princeton, NJ 08540. \$95.

Hayes Terminal Program. Standalone disk designed for the Micromodem II lets CP/M, DOS 3.3, and Pascal disks create, list, delete, send, and receive files. Opens access to nonkeyboard ASCII characters and prints incoming data as it is displayed. Hayes Microcomputer Products, 5835 Peachtree Corners East, Norcross, GA 30092. \$99.

Hello Central! Menu-driven modem software. Upload-download, send-capture, save, retrieve, edit and manipulate files and programs. Advanced Operating Systems, 4300 W. 62nd St., Indianapolis, IN 46206. \$99.

Micro/Courier. Electronic mail program. Provides file transfer of any DOS 3.3 file (correspondence, *VisiCalc*, charts) automatically and unattended. Built-in text editor; maintains 100 mailboxes; per-

mits optional clock and calendar scheduling. Microcom, 1400A Providence Hwy., Norwood, MA 02062. \$250.

Micro/Terminal. Access and exchange information with mainframes and minis, databases like the Source, and other remote terminals and personal computers. Supports keyboard mapping, upper and lower case, and 80-column cards. Microcom, 1400A Providence Hwy., Norwood, MA 02062. \$84.95.

P-Term: The Professional. Supports all Pascal-compatible interfaces, asynchronous serial cards, Apple-compatible modems, and baud rates up to 2,400. Southwestern Data, 10761-E Woodside Ave., Santee, CA 92071. \$129.95.

Super Smart. Terminal emulation package to capture, create, edit, print, and save data Softspoken, Box 7000-863, Redondo Beach, CA 90277. \$60.

Transend I, II, and III. Intelligent terminal software with multiple hardware compatibility. Advanced, easy to use. The *I* sends text only; menu driven, limited editor. The *II* sends text and files like *VisiCalc*; verifies transmission. The *III* does both and handles electronic mail with auto-redial, clock calendar, and password protection. Upgrade for only \$20; all three get an A+ for error handling. SSM, 2190 Paragon Dr., San Jose, CA 95131. \$89, \$149, \$275. 9/82.

VisiTerm. Well-planned, comprehensive. Hi-res 60-character display; wide range of protocols for sending text. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. \$129. 9/81.

Z-Term. Blue. Flexible, customizable communications software written specifically for the CP/M Apple. A quality package. Southwestern Data, 10761-E Woodside Ave., Santee, CA 92071. \$99.95. 5/81.

Z-Term: The Professional. More than an update. Compatible with a great variety of modems, interface cards, and screen modes. Simple file transfer with integrity. Southwestern Data, 10761-E Woodside Ave., Santee, CA 92071. \$149.95.

500% Faster Loading of Textfiles, Integer, Applesoft & Binary and Now Six Powerful Extra Commands in Standard DOS 3.3

30 out of 60 bought it on the spot when DAVID-DOS™ was demonstrated at the Original Apple Corps, UCLA.

Automatically supports an Integer or Apple-soft Rom Card in any slot (without configuring).

Six New Commands

1. TLOAD Speed loads all Text Files.
2. TLIST Lists all Text Files to screen/printer.
3. DUMP Binary/Ascii to screen or printer.
4. DISA Disassembles Binary to screen/printer.
5. AL Prints program Address & Length.
6. HIDOS DOS moves itself to Language Card

Like Other DOS Commands

These six commands operate identical to existing DOS commands. Use A or AS for address and L or LS for length. Enter them on the Keyboard and use them in Basic programs with the familiar D\$.

100 Sectors in 7 Seconds

TLOAD loads a Visacalc Template of a hundred sectors in 7 seconds and TLIST scrolls it to screen or printer. TLOAD speed loads Sequential and Random Text Files starting at \$1000 or as specified by A. It loads the entire file or a smaller length specified by L.

List Any Textfile

TLIST lists Sequential and Random Text Files to screen and printer.

DUMP screen dumps memory with Ascii along the right side. Use A and L for specific dumps. Without them it starts at \$00 and stops with return.

Disassemble Machine Code

DISA disassembles machine code to screen. Use A and L for specific routines.

Variable Speed Scrolling

TLIST, DUMP and DISA Features:

1. Print with PR#
2. Key operated variable speed control.
3. Instant pause with Space Bar.
4. Exit anytime with Return Key.

10K More of Memory

HIDOS command checks for a language card in slot 0 and moves DOS residing in memory to the card at \$DD00. Himem is set at \$BE00 adding 10K of free memory for programs. The Integer Card is still automatically supported in any slot. \$300 to \$3D0 is kept free.

Apple II and Applesoft are trademarks of Apple Computer inc. Visicalc is a trademark of VisiCorp.

Two More New Commands

HIDOS has all previous commands and features operational and adds a 7th command FIND. Find searches 64K memory in 3 seconds for any Hex sequence up to 31 bytes long and prints the addresses to screen. Hidos has an optional 8th command DATE configured for Mountain Hardware clocks and is useable in basic programs.

Use with Most Software

DAVID-DOS is totally accurate and speed loads without over-writing. Great care was taken to keep DOS standard and compatible with most software. All DOS entry addresses have been preserved. Only two routines were moved to allow more room in command tables. DOS is the same length. Init areas were used for DAVID-DOS.

Install in Seconds

Catalog Free Space is also provided. DAVID-DOS installs in seconds on blank or full disks. Requires a 48K Apple II with DOS 3.3.

Comes with instructions.

California residents add 6 1/2% sales tax.

\$39.95

Foreign add \$2.00.

To Order: Send Check To
12021 WILSHIRE BLVD., SUITE 212
LOS ANGELES, CA 90025 (213) 478-7865

DAVID DATA

Spinnaker presents Delta Drawing.™



**An introduction to the
modern art of programming
using the ancient art
of drawing.**

Kids love to draw.

And with Delta Drawing, your children can have fun creating their own colorful drawings, and at the same time, learn about computer programming.

Delta Drawing is much more than just a fun game. It's an educational tool that helps children develop their creativity, learn to write computer programs and

build an understanding of procedural thinking.

that was written. As children progress, they can begin to write their programs in the text mode and switch to the graphics mode to see their pictures. They can even switch back and forth between graphics and text modes.

Delta Drawing will make your child comfortable with the computer and helps develop procedural thinking—the kind of step-by-step approach needed to write programs and solve problems

with computers.

Get Delta Drawing today.

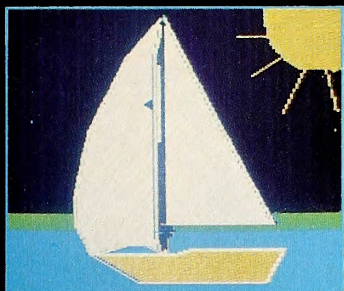
Delta Drawing can be played on Apple®, IBM® and Atari® computers.

It comes complete with easy-to-follow fast-start cards. And for more advanced users, a completely detailed instruction manual.

You can save your child's drawings on a blank disk and even print them, if you have a printer with graphics capabilities.

So look for Delta Drawing at your local software store. Or write to Spinnaker, 215 First Street, Cambridge, MA 02142.

You'll find that when we combined learning and fun, we created a work of art.



Easier to use than LOGO.

Delta Drawing makes it easy for children to use the computer—even if they've never used a computer before.

In fact, it's easier to use than LOGO turtle graphics. And Delta Drawing costs less than half as much as LOGO.

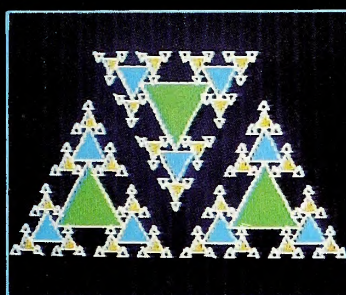
With Delta Drawing, your child controls the Delta cursor, and the Delta cursor controls all the action. So kids can learn at their own pace while they're having fun.

How your children will learn programming.

With Delta Drawing, your child first creates a picture using simple, single-key commands, for example: "D" for draw, "L" for left, "E" for erase.

As the picture is being drawn, the computer keeps track of every keystroke and records it as a program.

Then, by touching the "T" key for "text mode," the child can see the program



SPINNAKER

We make learning fun.

Introducing Snooper Troops™ detective series.

Educational games that turn ordinary homes into Sherlock homes.

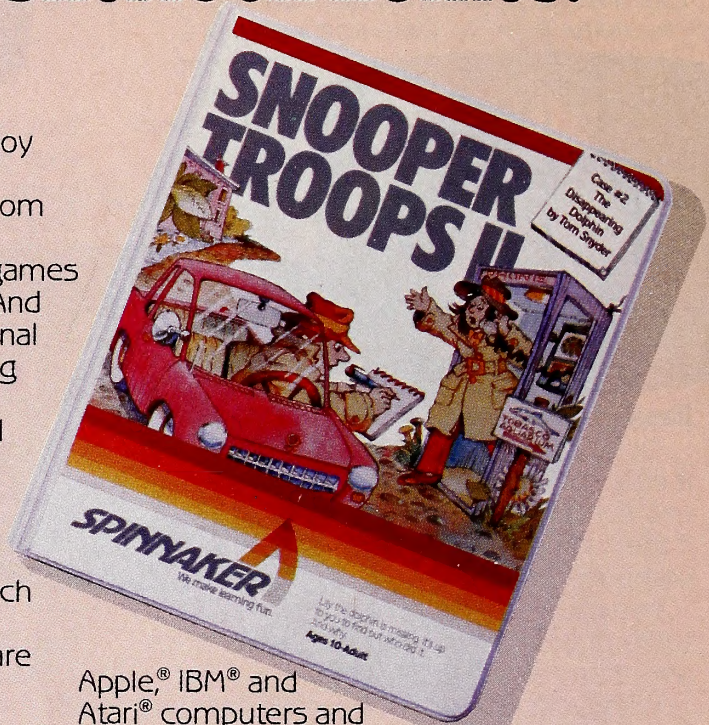
Where can you find educational games that your kids will really enjoy playing?

Elementary, my dear Watson. From Spinnaker.

Our Snooper Troops detective games are fun, exciting and challenging. And best of all, they have real educational value. So while your kids are having fun, they're learning.

As a Snooper Trooper, your child will have a great time solving the mysteries. But it will take some daring detective work. They'll have to question suspects, talk to mysterious agents, and even search dark houses to uncover clues.

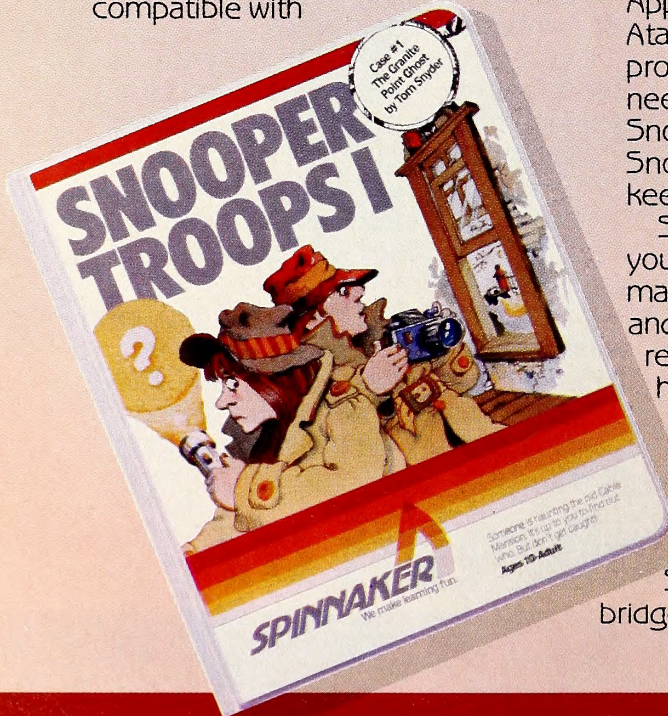
The Snooper Troops programs are compatible with



Apple®, IBM® and Atari® computers and provide your kids with everything they need: a SnoopMobile, a wrist radio, a SnoopNet computer, a camera for taking Snoopshots and even a notebook for keeping track of information.

Snooper Troops detective games help your children learn to take notes, draw maps, organize and classify information and they help develop vocabulary and reasoning skills. All while your kids are having a good time.

So if you want to find educational games that are really fun, here's a clue: Snooper Troops games are available at your local software store, or by writing to: Spinnaker Software, 215 First Street, Cambridge, MA 02142.



Spinnaker's early learning games will help make your children as smart as you tell everyone they are.



Your kids are pretty smart. After all, they're your kids.

Spinnaker can help make them even smarter. With a line of educational software that kids love to play.

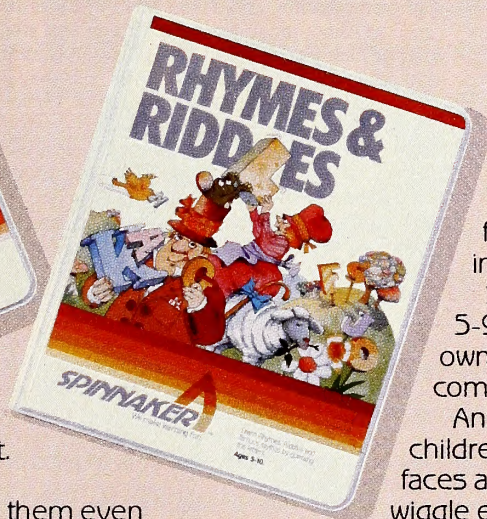
Spinnaker games make the computer screen come to life with full color graphics and sound. And they're fun. Lots of fun. But they also have real educational value.

Some of our games help exercise your child's creativity. Others improve memory and concentration. While others help to improve your child's writing, vocabulary, and spelling skills.

And every Spinnaker game provides familiarity with the computer and helps your children feel friendly with the computer. Even if they've never used a computer before.

And Spinnaker games are compatible with the most popular computers: Apple®, Atari® and IBM®.

Our newest game, KinderComp™ (Ages 3-8) is a collection of learning exercises presented in a fun and exciting manner.



Rhymes and Riddles™ (Ages 4-9) is a letter guessing game featuring kids' favorite riddles, famous sayings and nursery rhymes.

Story Machine™ (Ages 5-9) lets children write their own stories and see them come to life on the screen.

And FACEMAKER™ lets your children create their own funny faces and make them wink, smile, wiggle ears (not your kids' ears, the ears on the screen), etc.

And we're introducing new games all the time.

So look for Spinnaker games at your local software retailer, or by writing to: Spinnaker Software, 215 First St., Cambridge, MA 02142. And show your kids how smart their parents really are.



SPINNAKER™
We make learning fun.

Apple, IBM and Atari are registered trademarks of Apple Computer, Inc., International Business Machines Corp. and Atari, Inc., respectively.

Fantasy

Adventure to Atlantis. Clardy. The sequel and worthy successor to *Odyssey*. Many refinements including recruitable entourage of wizards with individual attributes. Included cheat sheet is invaluable. Synergistic, 830 N. Riverside Dr., Ste. 201, Renton, WA 98055. \$40. 6/82.

● **Beneath Apple Manor.** Worth. The original dungeon game for the Apple, created in 1978. Newly released version has hi-res, sound effects, a few more magic items, but still the classic game. Quality, 6660 Reseda Blvd., Ste. 105, Reseda, CA 91335. \$29.95.

Empire II. Mullich. Second scenario in the promised Empire trilogy. With civilization at the apex of its power and complexity, you must cut through red tape to gain freedom and dignity. Edu-Ware, Box 22222, Agoura, CA 91301. \$32.95.

Knight of Diamonds. Second scenario of *Wizardry*, requiring thirteenth-level characters from the original. Individual quests on each of six dungeon levels. Great. Sir-tech, 6 Main St., Ogdensburg, NY 13669. \$34.95. 7/82.

Microbe. Clardy, Zalta. An internal course in disease diagnostics, medical procedures, anatomy, and health and safety, disguised as a fantasy/adventure/arcade/simulation. "Enjoy your next viral infection!" Good game, great educational tool. Synergistic, 830 N. Riverside Dr., Ste. 201, Renton, WA 98055. \$44.95.

● **Odyssey: The Compleat Adventure.** Clardy. Fantasy adventure far beyond one place and one setting. Castles, catacombs, an ocean voyage, and the orb of power. Synergistic, 830 N. Riverside Dr., Ste. 201, Renton, WA 98055. \$30. 10/80.

● **Temple of Apshai.** Lead title in *Dunjonquest* series, winner 1981 Academy of Adventure Gaming Arts and Design "Computer Game of the Year" award. Epyx/Automated Simulations, 1043 Kiel Ct., Sunnyvale, CA 94086. \$39.95.

Ultima. British. Hi-res color adventure, progressing from Middle Ages to beyond the space age. A masterpiece. California Pacific, 1623 5th St., Davis, CA 95616. \$39.95. 6/81.

Ultima II. British. Faster play in a bigger universe with a time-travel option. Typically British look and feel. Events are much more interdependent; larger realm of fantasy with more transactions available. Sierra On-Line, 36575 Mudge Ranch Rd., Coarsegold, CA 93614. \$59.95.

Upper Reaches of Apshai. The next four levels (and requires) *Temple of Apshai*. Discover the secret of the monastery, battle giant tomatoes and killer chickens. Epyx/Automated Simulations, 1043 Kiel Ct., Sunnyvale, CA 94086. \$19.95.

● **Wilderness Campaign.** Clardy. First fantasy game. Synergistic, 830 N. Riverside Dr., Ste. 201, Renton, WA 98055. \$17.50.

Wizardry. Greenberg, Woodhead. Ultimate role-playing fantasy; ten-level maze in hi-res. Generate twenty characters, six at a time on expeditions. Gripping game; superbly produced. Sir-tech, 6 Main St., Ogdensburg, NY 13669. \$49.95. 8/81.

Graphics

Alpha Plot. Kersey, Cassidy. Hi-res graphics and text utility with optional xdraw cursor and proportional spacing. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. \$39.50.

The Complete Graphics System II. Pelczarski. A wealth of graphics tools at a reasonable price. Make 2-D drawings with game paddles, add text in destructive, nondestructive, or reverse modes, create 3-D figures with a panel module and shape tables with a shape module. Manual features complete outline of command structure. Penguin, 830 4th Ave., Geneva, IL 60134. \$69.95; Apple Graphics Tablet version, \$119.95. 7/81.

GPS. Versatile graphics program. Creates, manipulates, and edits images like a word processor. Easy to use; in standard and professional formats. Stone-ware, 50 Belvedere St., San Rafael, CA 94901. \$59.95, \$99.99.

GraForth. Lutus. A graphics language rewritten for maximum speed. Plotting, line, text display, character image, and high speed 3-D graphics, with variety of colors and drawing options. Includes music synthesizer. Insoft, 10175 S.W. Barbur Blvd., Ste. 202-B, Portland, OR 97219. \$75. 8/82.

The Graphics Magician. Jochumson, Lubar, Pelczarski. Outstanding animation package consisting of a picture editor and shape table extender designed to allow programmers to design and store graphics files. Comes with utility program to transfer binary files. Penguin, 830 4th Ave., Geneva, IL 60134. \$59.95; Apple Graphics Tablet version, \$69.95. 5/82.

LPS II. Superb hi-res graphics drawing system with light pen. Draw freehand or use circles and lines to create geometric shapes. Fill routine with colors and patterns; fun animation demo; programmable Pentrak driver. Gibson, 23192-D Verdugo Dr., Laguna Hills, CA 92653. \$349. 10/82.

Special Effects. Pelczarski. Artist's graphic package for creating and enhancing computer graphics. With 108 colors and 96 brushes, magnification and editing point by point. Reverse colors, create mirror images, move images around. Penguin, 830 4th Ave., Geneva, IL 60134. \$39.95.

Zoom Grafix. Holle. Graphics printing utility allows display of picture on screen prior to print; prints out selected portion at any size. Phoenix, 64 Lake Zurich Dr., Lake Zurich, IL 60047. \$39.95. 2/82.

Home

Career Directions. Take a systematic approach to making career decisions. Professionally designed assessment analysis, planning, and exercises. Systems Design, 723 Kanawha Blvd., Ste. 403, Charleston, WV 25301. \$59.95.

Chequemate. Home finance package that handles checks, charge cards, cash control, automatic tellers, and more. Reports to screen or printer. A bargain. Masterworks, 25834 Narbonne Ave., Lomita, CA 90717. \$39.95.

The Creator. Write applications programs for database management, mailing lists, invoicing, sorting algorithms, and other applications. Generates title pages and menus. No programming knowledge necessary; lines and increments can be set as program is generated. Software Technology for Computers, Box 428, Belmont, MA 02178. \$200.

Crossword Magic. Crossword puzzle maker. Choose subject, words, and clues; program automatically connects words. Play on screen or make professional-quality printout. L & S Computerware, 1589 Fraser Dr., Sunnyvale, CA 94087. \$49.95.

Dow Jones Market Analyzer (formerly *RTR Market Analyzer*). Automatically collects, stores, and updates historical and daily market quotes. Provides technical analysis and plots eighteen different types of charts. Dow Jones Software, Box 300, Princeton, NJ 08540. \$350.

Electric Duet. Lutus. Two-voice music without hardware. A bit involved, but superb sound quality. Insoft, 10175 S.W. Barbur Blvd., Ste. 202-B, Portland, OR 97219. \$29.95. 7/12.

Home Accountant. Schoenburg. Thorough and powerful home finance program. Monitors five checking accounts against a common budget, plus credit cards and cash; one-step record of transfer of funds. Continental, 11223 S. Hindry Ave., Los Angeles, CA 90045. \$74.95. 4/82.

Know Your Apple IIe. Tutorial program with everything you wanted to know about the soul of your new machine. Muse, 347 N. Charles St., Baltimore, MD 21201. \$24.95.

Micro Cookbook. What's for dinner, Apple? Select recipes, create your own cookbook. Includes hundreds of international recipes, charts, tables, techniques, and a glossary. Virtual Combinatics, Box 775, Rockport, MA 01966. \$30.

Multi-Disk Catalog III. Very fast machine language database program for reading and storing file names, types, and sizes. Fast, powerful sort-and-search feature. Sensible, 6619 Perham Dr., W. Bloomfield, MI 48033. \$25. 10/81.

Personal Finance Manager. Gold, Software Dimensions. Handles up to 200 entries a month from maximum of 14 separate accounts. Search-sort-edit routine. Apple/Special Delivery, 20525 Mariani Ave., Cupertino, CA 95014. \$75. 11/81.

Real Estate Analyzer. Make buy and sell decisions, compare investments, project future sales year to year for ten years. File, retrieve, and alter information itemized in tabular form. Howard Software, 8008 Girard Ave., Ste. 310, La Jolla, CA 92037. \$195. 7/81.

Tax Manager. Helps prepare federal returns and print schedules. Micro Lab, 2310 Skokie Valley Rd., Highland Park, IL 60035. \$150.

Tax Preparer. Record-keeping program with wide variety of federal tax forms and schedules; creates itemized lists. Yearly updates. Howard Software, 8008 Girard Ave., Ste. 310, La Jolla, CA 92037. \$99.

VisiDex. Jennings. Electronic index and file-agenda program for spontaneous or structured information entry. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. \$199.95.

Home-Arcade

A.E. Wada, Horai. Blasting away like mad in 3-D. Time the release and detonation of missiles and repel the next wave. Innovative graphics, new firing technique, and fugues to boot. Broderbund, 1938 4th St., San Rafael, CA 94901. \$29.95.

Alien Ambush. Shoot-'em-up in which hordes of the little devils divide to conquer you. Micro D, 17406 Mt. Clifford Circle, Fountain Valley, CA 92708. \$34.95.

● **Alien Rain (Apple Galaxian).** Suzuki. Monsters in this home-arcade classic seem to take it personally when you gun down one of their kind. Broderbund, 1938 4th St., San Rafael, CA 94901. \$24.95. 2/81.

Apple Panic. Serki. Rid a five-story building of crawling Apples and butterflies by running up and down connecting ladders, digging traps in floors, then covering critters over before they devour you. Extremely addictive, excellent hi-res play. Broderbund, 1938 4th St., San Rafael, CA 94901. \$29.95. 9/81.

The Arcade Machine. Jochumson, Carlston. Step-by-step arcade game designer—shapes, scoring, sound, and titles. Begin with variations on five games included, then on to your own. Broderbund, 1938 4th St., San Rafael, CA 94901. \$59.95. 11/82.

Artesians. Rena-soft. A little maze, a little street-crossing, a little panic, a little beer: get to the fourth floor and fill your water jugs while dodging dog, guard, and annoying title creatures. Renaissance Technology, 1070 Shary Circle, Concord, CA 94518. \$34.95.

Aztec. Stephenson. Graphic fantasy arcade with animation on-screen throughout. DataMost, 8943 Fullbright Ave., Chatsworth, CA 91311. \$39.95.

Bandits. Ngo. Fight off waves of multiple menaces intent on killing you and stealing your supplies. Delirious nonstop action, animated to the hilt. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. \$34.95. 7/82.

Beagle Bag. Kersey. Twenty games and miscellany, written in Basic and unprotected. Great humor, good two-player games. The manual is worth the price of admission. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. \$29.50. 1/83.

THE HEAD OF THE CLASS



Give your child the thinking tools that stand in a class by themselves: programs for your home from Computer-Advanced Ideas.

For The Fun Of It

As professional educators and programmers we've been proving for over a decade that motivated learners do best. Featuring full-color graphics, our animated learning games are fun. They talk like a friend, play like a teammate and teach like a tutor. And they stimulate eager young minds.

Partners In Learning

CAI programs come with a library of knowledge for your child to explore. But that's just the beginning. They also feature a unique authoring system that lets you create lessons on any subject, tailoring the program to your child's needs. No knowledge of computers is required. Our programs make sense to *people* — from 4 to 94 — and grow right along with your child.

A Success In Schools

Over 1800 school districts have chosen CAI programs to teach essential vocabulary and logic skills in a full range of topics. Our products get recognition — because they work.

Head Start

Your child's future begins with opportunities you create at home. Choosing resources that are stimulating, challenging and fun can be one of the best decisions you make. Ask your computer retailer for a demonstration of CAI programs and see for yourself how enjoyable a good education can be.



**Computer
Advanced
Ideas**



Bringing Ideas Home

1442A Walnut Street, Suite 341
Berkeley, CA 94709 (415) 526-9100

For the Apple II/IIe

Beer Run. Turmell. Artesian's delight. Catch falling cans on your way up one building, hop the blimp, and work your way down another. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. \$29.95. 1/82.

Bolo. Micro version of sci-fi fantasy. Colossal-sized maze where you don't eat anything. Drive around in tank and destroy enemy bases as you're dogged by intelligent assassin tanks. Much depth, many months' fun. Top class. Synergistic, 830 N. Riverside Dr., Ste. 201, Renton, WA 98055. \$34.95

Cannonball Blitz. Lubeck. In the cold light of dawn, you must find the key to victory, no matter how incongruous. Sierra On-Line, 36575 Mudge Ranch Rd., Coarsegold, CA 93614. \$34.95. 7/82.

Canyon Climber. Mountford. Scale the levels and ladders while avoiding arrows, gorges, and hi-res sheep (no cows). Score by setting explosive charges. DataSoft, 19519 Business Center Dr., Northridge, CA 91324. \$29.95.

Choplifter. Gorlin. Fly your chopper into the Bungee Empire to rescue the sixty-four hostages, avoiding interceptor jets, homing mines, and tanks. Challenging, realistic, and playful. Broderbund, 1938 4th St., San Rafael, CA 94901. \$34.95. 7/82.

Crisis Mountain. Schroeder. Run, crawl, walk, and leap through mountain maze fraught with rolling rocks, geysers, and chasms: collect nuclear devices. Synergistic, 830 N. Riverside Dr., Ste. 201, Renton, WA 98055. \$34.95. 10/82.

● **Crossfire.** Sullivan. Aliens come at you from three directions on a grid laid out like city blocks. Each alien has four lives and metamorphoses into its next one when shot. Strategy and intense concentration required. Superb, smooth animation of a dozen pieces simultaneously. One of the great ones. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. \$29.95. 1/82.

David's Midnight Magic. Snider. Pinball challenger to *Raster Blaster*. Excellent hi-res graphics and animation. Provision for earning extra balls. Broderbund, 1938 4th St., San Rafael, CA 94901. \$34.95. 2/82.

● **Epoch.** Miller. Superbly stylized animation enhances this filmic shoot-'em-up. Tremendous sense of being in space; neat classical music and dramatic time warp sequence. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. \$34.95. 10/81.

● **Gorgon.** Nasir. Fly over planet shooting and dodging invaders and saving kidnapped inhabitants. Outstanding hi-res graphics, challenging refueling sequence—if you can get that far. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. \$39.95. 8/81.

Grapple. Lewis. There's a jailbreak of galactic undesirables; player keeps them rounded up in this stunt-'em-up showdown. Insoft, 10175 S.W. Barbur Blvd., Ste. 202B, Portland, OR 97219. \$29.95.

Jawbreaker 2. Beuche. No relation or resemblance to Number 1—*Jawbreaker 1* or Beuche's first; otherwise, hard to describe but very playable. New, fun, and fresh. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. \$34.95. 1/83.

LPS II Madness. Besnard. Confused shoot-out in classic Bez style—without game controllers or keyboard. Designed to be used with the LPS II light pen. Nice as a novelty for LPS II owners; give your fingers a break. Bez, 4790 Irvine Blvd., Ste. 108B, Irvine, CA 92714. \$26.44.

Lunar Leeper. Beuche. Silly, enjoyable rescue mission with challenging ship control and unpredictable foes. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. \$29.95. 1/83.

Marauder. Weigandt, Hammond. Double duty: bust through force field as a rocket, then switch to man in a maze. Nine mazes with fifteen levels of difficulty. Sierra On-Line, 36575 Mudge Ranch Rd., Coarsegold, CA 93614. \$34.95. 9/82.

● **Meteoroids (Asteroids) in Space.** Wallace. Making little asteroids out of big ones, plus occasional hostile alien ships. Hyperspace, autobrake, autofire. Quality Software, 6660 Reseda Blvd., Ste. 105,

Reseda, CA 91335. \$19.95.

Microsoft Decathlon (Formerly *Olympic Decathlon*). Smith. Ten standard decathlon events. Hi-res animated athletes, muscle-stirring music; you provide the sweat. Microsoft, 10700 Northup Wy., Bellevue, WA 98004. \$29.95. 6/81.

Miner 2049er. Livesay, Hogue. Run, jump, climb, and slide through the mines, reinforcing the ground-work along the way. Elevators, cannons, chutes, and ladders help as you avoid or stomp mutants on the way. Hot stuff, best of the genre. Micro Lab, 2310 Skokie Valley Rd., Highland Park, IL 60035. \$39.95. 1/83.

Pandora's Box. Chase game with player as pursuer for a change. Zap ancient evils back to where they came from and live to tell about it. Watch those darn birds. DataMost, 8943 Fullbright Ave., Chatsworth, CA 91311. \$29.95.

Pest Patrol. Allen. Where have all the flowers gone? Frenzied new bug game with hopping spiders, killer butterflies, and shielding snails—all with dive-bombing capabilities. Sierra On-Line, 36575 Mudge Ranch Rd., Coarsegold, CA 93614. \$34.95. 10/82.

Pinball A2-PB1: Night Mission. Artwick. Fantastically realistic and competitive ten-mode pinball simulation, allowing user modification and definition of virtually every aspect of play. SubLogic, 713 Edgebrook Dr., Champaign, IL 61820. \$29.95. 5/82.

Pinball Construction Set. Budge. Design and play your own computer pinball games, on screen, with zero programming. A miracle of rare device. Superior. BudgeCo, 428 Pala Ave., Piedmont, CA 94611. \$39.95.

● **Pool 1.5.** Hoffman, St. Germain, Morock. Makes most shots you could on a real table, with the advantages of instant replay and slow motion. Four different games. IDSI, Box 1658, Las Cruces, NM 88004. \$34.95. 6/81.

● **Raster Blaster.** Budge. Pinball game as good as real ones. *Softalk* readers' Most Popular Program of 1981. BudgeCo, 428 Pala Ave., Piedmont, CA 94611. \$29.95. 5/81.

Repton. Thompson, Kaluzniacki. The ne plus ultra of planet-defending, in the *Defender* style, plus. Top-flight all the way. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. \$39.95. 1/83.

Roach Hotel. Livesay. Vermin-stomping high jinks for those who like that sort of thing. Micro Lab, 2310 Skokie Valley Rd., Highland Park, IL 60035. \$34.95. 3/82.

Sea Dragon. Anderson. Talking tunnel endurance test where a variety of underwater nasties try to keep player from freeing the little sea serpent. Adventure International, Box 3435, Longwood, FL 32750. \$34.95.

Seafox. A good sub-versus-convoy home-arcader. Variety of vessels, bouncing torpedoes, refueling dolphins (food not included), and intelligent depth charges. Broderbund, 1938 4th St., San Rafael, CA 94901. \$29.95. 11/82.

Serpentine. Hypnotic snake-chase maze game. Clean action, thrills, hairy escapes. Recommended. Broderbund, 1938 4th St., San Rafael, CA 94901. \$34.95. 10/82.

Snack Attack. Illowsky. A three-maze eat-'em-up; starts at any of five speed levels. Nonfattening. DataMost, 8943 Fullbright Ave., Chatsworth, CA 91311. \$29.95. 1/82.

● **Sneakers.** Turmell. Many-layered shoot-'em-up, one of the best. Stomping sneakers and swarm of other creatures add to the fun. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. \$29.95. 9/81.

Space Eggs. Nasir. Addictive fuzz ball fighting; right up there with *Galaxian*. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. \$29.95. 4/81.

Spider Raid. Marsh. Spider hero searches for food while dodging acid rain droplets and spray cans. Insoft, 10175 S.W. Barbur Blvd., Ste. 202B, Portland, OR 97219. \$29.95.

Spy's Demise. Be the first on your block to run a maze of pile-driving elevators. Fast, frustrating fun

with a game show bonus; complete puzzle after all nine levels and win a prize. Penguin, 830 4th Ave., Geneva, IL 60134. \$29.95. 11/82.

Star Blazer. Suzuki. Bomb-run game with five levels, minutely exact animation, and style to burn. A joy. Broderbund, 1938 4th St., San Rafael, CA 94901. \$31.95. 4/82.

Star Maze. Eastman. Hunting for power jewels through sixteen zero-gravity mazes filled with unfriendlies. Uses eighteen hi-res colors and multidirectional scrolling. Mapping advised. A standout. Sir-tech, 6 Main St., Ogdensburg, NY 13699. \$34.95. 11/82.

● **Super Invader.** Hata. The daddy of home-arcades. Still good hi-res, still a challenge. *Softalk* readers' Most Popular Program of 1978–80. Astar Intl., through California Pacific, 1615 5th St., Davis, CA 95616, and Creative Computing, 39 E. Hanover Ave., Morris Plains, NJ 07960. \$19.95.

Super Taxman 2. Fitzgerald. Pac up your troubles! Bigger, more complex version of the most perfect extant legal rendition of a certain arcade game. You can look at the cartoons whenever you want. H.A.L. Labs, 4074 Midland Rd., Ste. 23, Riverside, CA 92505. \$25.

Swashbuckler. Stephenson. Hi-res swordfighting with realistic pirates, snakes, rats, and other scum. DataMost, 8943 Fullbright Ave., Chatsworth, CA 91311. \$34.95. 8/82.

Tharolian Tunnels. Nelsen. Shoot-'em-up with several stages of play; on par with *Falcons*. Software Farm, 3901 S. Elkhart St., Aurora, CO 80014. \$29.95. 10/82.

Tubeway. Van Brink. Tempestuous galaxy-saving action with thirty-two levels. DataMost, 8943 Fullbright, Chatsworth, CA 91311. \$34.95.

Wavy Navy. McAuley. Galaxy shooting game brought down to sea level in bright, cartoon-style hi-res. No aliens raining on player's patrol boat; just kamikaze pilots, bombers, and missiles. Shoot them, or it's "P.T. blown home." Good, fun game. Sirius, 10364 Rockingham Dr., Sacramento, CA 94827. \$34.95.

Wayout. Exciting 3-D maze that moves in perspective as you play. Map displayed at all times. Lots of angles and Cleptangles. Separate version for Ile. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. \$39.95. 10/82.

Zargs. McKee. You leap your way to space, dock for repairs, and dodge space debris, all before you battle it out with beasts from space. Four recognizable games make up this multistage game. Insoft, 10175 S.W. Barbur Blvd., Ste. 202B, Portland, OR 97219. \$34.95. 1/83.

Home Education

Algebra 1-4. Sets of learning units progressing from algebraic rules and definitions to graphing and inequalities. Individualized teaching styles to fit everyone's needs. Good for adults wanting to overcome math anxiety as well as for schoolkids. Edu-Ware, Box 22222, Agoura, CA 91301. \$39.95 each.

Apple Logo. Papert. Custom version (by its inventor) of MIT-developed turtle graphics language. First-rate educational tool with graphics, mathematical, even games use. Hefty documentation. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$175.

Bop-A-Bet. Alphabetic eat-'em-up, teaching letter recognition and eye-hand coordination. Lets little ones emulate older sibs. Sunnyside Soft, 5815 E. Parkside, Fresno, CA 93727. \$29.95.

Delta Drawing. Kids can make colorful drawings by using single-keystroke commands. No special talent needed; this one develops programs that create complex graphics. Spinnaker, 215 1st St., Cambridge, MA 02142. \$59.95. 11/82.

Dragon's Keep. Graphics adventure in which youngsters find and free imprisoned animals. Written for second-grade-level readers; requires the touch of a key, no typing, to execute actions. Encouraging and

HAVEN'T YOU HEARD OF THUNDERCLOCK PLUS™?



If you want to put your Apple® to work—around the clock—Thunderclock Plus is the solution. Just plug it in and your programs can read the month, date, day of week and time—down to the second—in any of Apple's languages. So your Apple can do any number of tasks for you automatically. In the office, the lab or at home.

Most good software packages for business, data base management, communications and time management are made to read Thunderclock Plus. (It's compatible with DB Master,* Micro-Courier** and VisiDex†, to name a few). So no matter how you use your Apple now, Thunderclock Plus can make it a more versatile and efficient tool.

For example, with business or communications software, your Apple can automatically access a data base or send electronic mail when the rates are lowest.

In addition, Thunderclock Plus can organize your disk files. Our optional DOS-DATER™ software upgrades the regular DOS on your disks. So every time a program is saved or a file is modified, the time and date, *to the minute*, are stored in the CATALOG with the file name. Now you can instantly know exactly when your files were last updated.



Thunderware's DOS-DATER time and date stamps your disk files to the minute.

Thunderclock Plus can even give you a sense of security. Or just make your life a little easier. With our X-10 interface option and a BSR X-10‡ Home Control System, your Apple can turn on your lights, water your lawn... whatever you desire, according to schedules you create. It comes with our menu-driven SCHEDULER software. So it's easy to design and modify schedules that can run in the "background" while you have "hands-on" use of your Apple.

Thunderclock Plus comes with a one-year warranty. Powered by on-board batteries, it runs accurately for up to four years without battery replacement.

So now that you've heard of Thunderclock Plus, isn't it time you put your Apple to work—around the clock? See your dealer for a demonstration or contact us.

THUNDERCLOCK PLUS and BASIC software	\$150
DOS-DATER/DEMO disk	\$ 29
X-10 Interface option	\$ 49
PASCAL software disk	\$ 29

* Apple is a registered trademark of Apple Computer, Inc.

* DB Master is a registered trademark of Stoneware, Inc.

** Micro-Courier is a registered trademark of Microcom.

† VisiDex is a registered trademark of VisiCorp.

‡ BSR X-10 is a registered trademark of BSR (USA) Ltd.



THUNDERWARE, INC.

44 Hermosa Ave., Oakland, CA 94618 (415) 652-1737

rewarding. All upbeat. Sunnyside Soft, 5815 E. Parkside, Fresno, CA 93727. \$34.95.

Earl's Word Power. Knudson. Educational software providing homonym training in a Shakespearean mode. Late elementary to early high school level. George Earl, 1302 S. General McMullen, San Antonio, TX 78237. \$29.95.

Early Games for Young Children. Paulson. Basic training in numbers and letters and the Apple keyboard for children ages two to seven. Has a neat little drawing program. Learning Tools. Ste. 140, Herald Plaza North, Minneapolis, MN 55426. \$29.95. 11/82.

Ernie's Quiz. CTW. Four games, four subjects, one disk. Image recognition, counting skills, creativity, and Muppet expertise are introduced with lots of positive feedback. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$50.

E-Z Learner. Teach the Apple to teach you. Feel successful. You pick the subject, make up the questions, and supply the answers. How can you miss? Different approach to learning. Silicon Valley Systems, 1625 El Camino Real, Ste. 4, Belmont, CA

94002. \$39.95.

Gertrude's Puzzles. A delightful goose helps teach how to figure out stuff given incomplete information. Super for developing reasoning skills in people ages six through forever. The Learning Co., 4370 Alpine Rd., Portola Valley, CA 94025. \$75.

Gertrude's Secrets. Gertrude the Goose teaches four-to-nine-year-olds shape and color relationships. Solve logic puzzles and create shapes. The Learning Co., 4370 Alpine Rd., Portola Valley, CA 94025. \$75.

Instant Zoo. CTW. Identify animals, test perception and reaction, match and decode words. A word editor lets you create your own word lists for the games. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$50.

Kindercomp. Learning exercises for ages three through eight. Spinnaker, 215 1st St., Cambridge, MA 02142. \$29.95.

Knowledge Bowl. Home version of that television college quiz show. Test knowledge of humanities, social sciences, and hard sciences in more than thirty different programs. Play alone or compete with a

companion. Well done. Academic Hallmarks, Box 998, Durango, CO 81301. \$27 each.

Krell Logo. Concentrates on underlying principles of Logo; sections on assembly language interfaces and music creation, plus *Alice in Logoland* tutorial. Krell, 1320 Stony Brook Rd., Stony Brook, NY 11790. \$149.95. 7/82.

Letter Man. Teaches typing, *Pac-Man* style. Behavioral Engineering, 230 Mt. Hermon Rd., Ste. 207, Scotts Valley, CA 95066. \$29.95.

MasterType. Zweig. Learn to type by playing a game; simple and ingenious. Lightning, Box 11725, Palo Alto, CA 94306. \$39.95. 4/81.

Micro Mother Goose. Rhyme-related games with progressive levels and popular rhymes with music and animation. Simple enough for tots to operate it. Free poster and stickers, too. Software Productions, 2357 Southway Dr., Box 21341, Columbus, OH 43221. \$39.95.

Mix and Match. CTW. Create mixed-up Muppets and teach the Apple about animals. Logic and word-guessing games for brain strain. Add your own word lists. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$50.

Mixed Numbers. Readiness skills, addition, subtraction, multiplication, and division of mixed numbers. Grades six through eight. Milton Bradley, 443 Shaker Rd., E. Longmeadow, MA 01028. \$44.95.

The New Step by Step. Software and audio tape team up to teach you Basic programming painlessly. Graphics, animation, and sound effects supplement the disk, and a workbook is provided for review. Superior. Program Design, 11 Idar Ct., Greenwich, CT 06830. \$79.95. 7/82.

Rhymes and Riddles. Cross. Four games to teach reading and spelling to elementary schoolchildren. Fill in the blanks with the necessary phrase. Spinnaker, 215 1st St., Cambridge, MA 02142. \$29.95.

Rocky's Boots. Rascally raccoon helps children build a basis for logical thinking and computer understanding. Construct machines of logical gates in convolutions of thickening complexity. Music and sound effects add to fun of learning. The Learning Co., 4370 Alpine Rd., Portola Valley, CA 94025. \$75.

SAT English I. Designed to help high school students prepare for the college entrance exam. Covers the verbal half of the test; learn by your own mistakes. Micro Lab, 2310 Skokie Valley Rd., Highland Park, IL 60035. \$30. 11/81.

Snooper Troops. Snyder. Ongoing hi-res mystery series in the form of educational games. Highly structured; excellent fourth-grade through eighth-grade educational tool, and great fun for adults. Spinnaker Software, 215 1st St., Cambridge, MA 02142. \$44.95 each. 9/82.

Stickybear. Hefter, Worthington. Early education programs use graphic animation: in *Stickybear ABC*, moving pictures with sound represent letters of the alphabet. In *Stickybear Numbers*, groups of moving objects teach numbers and simple arithmetic. Ages three through six. Xerox Education/Weekly Reader, 245 Long Hill Rd., Middletown, CT 06457. \$39.95 each.

Story Machine. Helps to develop positive attitude toward writing and the ability to write correctly. Words come to life when the sentence typed in is acted out on the screen. Kids 5 to 9 love to type "The tree ran down the street" and see it do so. Spinnaker Software, 215 1st St., Cambridge, MA 02142. \$34.95.

SuperPilot. Courseware authoring language based on Apple and Common Pilot. Twenty-six instructions for creating individually tailored lessons. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$200.

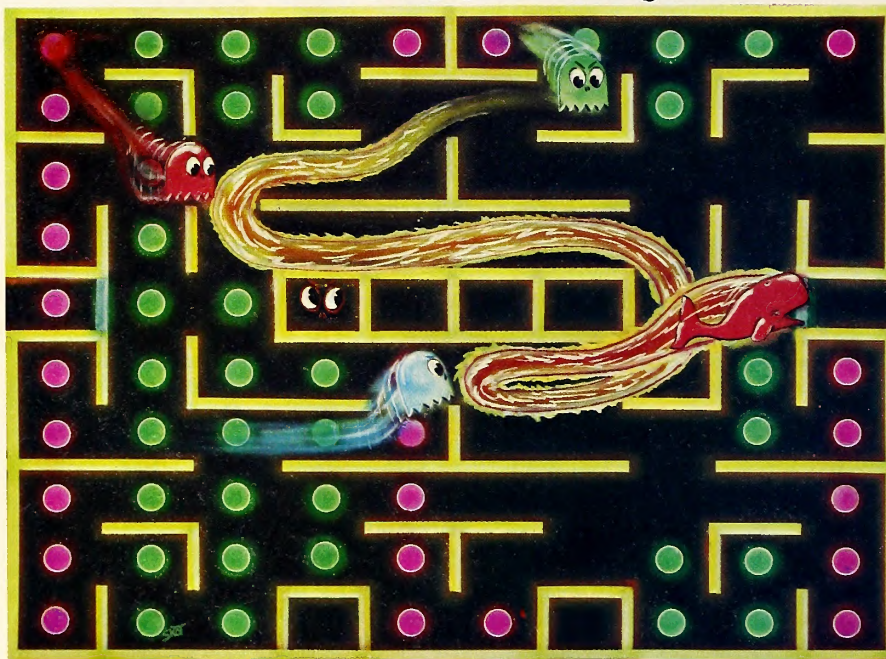
Terrapin Logo. MIT. The Logo language, using a Terrapin turtle to teach state, control, and recursion. Terrapin Inc., 380C Green St., Cambridge, MA 02139. \$149.95.

Type Attack. Hauser. Arcading with a purpose. Learn to type while defending the planet of Lexicon

Habit forming

SNACK ATTACK

Betcha can't play just one game!



Try one game and you're caught in its irresistible web of fun. More habit forming than peanuts. More fun than gorging on hot fudge sundaes. More exciting than anything like it.

SNACK ATTACK won't just a-maze you, it'll 3-maze you! Win the first level, and up pops a new, faster version, with a more intricate maze. And for more challenge there are doors you can enter and **they** can't. Doors **they** can dash thru and **you** can't!

SNACK ATTACK... by Dan Illowsky, the game that defies anyone to stop after just one game!

\$29.95, for Apple II*
At computer stores, or from:

DATAMOST

19273 Kenya St.
Northridge, CA 91326
(213) 366-7160

VISA/MASTERCARD accepted. \$1.00 shipping/handling charge. (Calif. residents add 6% tax)

*Apple II is a trademark of Apple Computer, Inc.

The arcade-warp is open!

YOU CAN RUN BUT CAN'T HIDE. YOU CAN KILL BUT CAN'T ESCAPE.

Tubeway! It's an insidious invasion route created by beings from a parallel universe—a strange, geometric universe. You're trapped on the rim as their fleet swarms out of the warp on a voyage of conquest. The battle is yours alone—and it's far from easy because normal strategy doesn't work! . . . you have to fight by their strange, geometric rules!

Here's the fastest, most fascinating of the new style space games. So involving and exciting it's destined to become an all-star, all-time hit. Be one of the first to take on the challenge of the lightfast Tubeway!

\$34.95 for the Apple II*.
At your computer store
or:

TUBEWAY

 **DATAMOST** INC.

9748 Cozycroft Ave., Chatsworth, CA 91311
(213) 709-1202

CORREY
WOLFE

VISA/MASTERCARD accepted. \$2.00 shipping/
handling charge. (California residents add
6 1/2% sales tax.)

Apple II is a trademark of Apple Computer, Inc.

MEGAFLEX[®]

ABILITY

You Pick The Disk System, MegaFlex Controls It!

WITH SOFTDRIVERS FOR A FLEXIBLE FUTURE!

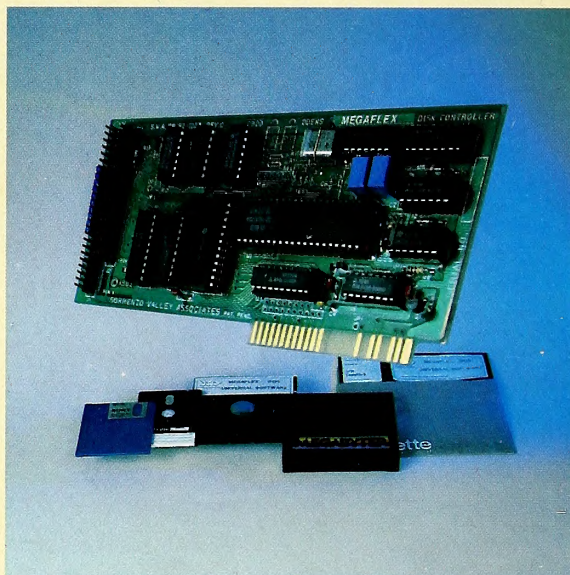
MEGAFLEX—a universal floppy disk controller and modern alternative to the Apple drive system offering increased storage, improved reliability and ... FLEXIBILITY.

Enjoy megabytes of online storage with your choice of micro, mini, or maxi drives—or even 6Mb with the Amlyn cartridge pack! Ideal for high-capacity storage now, winchester-disk backup later.

The MEGAFLEX secret is to autoboot soft-drivers that match the needs of your drive system. All hardware functions are software-controlled. MEGAFLEX can match new drive capabilities without hardware changes. Drive-dependent ROMs have been eliminated.

APPLE III? OF COURSE!!

MEGAFLEX is compatible with BASIC, CP/M, Pascal, VISICALC, SOS and DOS-emulation on the Apple III, Apple II, Franklin Ace and Basis. All language features and operating system commands (LOAD, BRUN, etc.) are standard. If you can operate Apple drives you can operate MEGAFLEX! Your Apple software will run without modification too.



BRIDGE THE APPLE FORMAT BARRIER!

The MEGAFLEX diskette does what Apple's cannot—read and write diskettes from other computers! Software-controlled industry-standard IBM 3740 or System 34 type formats allow the MEGAFLEX library of reformatting software to read and write Altos, Radio Shack, Osborne, and IBM PC diskettes. (Call for the latest software details.)

MORE STORAGE, MORE

UNIVERSAL FEATURES, LOWEST COST

MEGAFLEX with 8" maxi or high density 5.25" minis gives you 1.2 Megabyte of formatted data per diskette for 8 times the file and data size!

MEGAFLEX offers flexible software choices:

- data rate (250/500 Kbits per second),
- single and double density recording, and
- single/double sided drive operation (max 4 drives).

MEGAFLEX has the lowest chip count of any controller today! This means less power, a cooler Apple and better reliability.

Lowest price, highest performance, that's

MEGAFLEX!

MEGABYTE[™]

A Division of SVA

TRADEMARKS CP/M—Digital Research

11722 SORRENTO VALLEY ROAD
SAN DIEGO, CA
(619) 452-0101

TWX 910-335-2047 APPLE TWO SDG

from invaders. New IIe version teaches new IIe keyboard. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. \$39.95.

Typing Strategy. Uses animated keyboard image and two typing games to teach a typing strategy. Behavioral Engineering, 230 Mt. Hermon Rd., Ste. 207, Scotts Valley, CA 95066. \$29.95.

Typing Tutor. Ainsworth, Baker. Four levels of proficiency; individualized drills created with time response monitoring. Microsoft, 10700 Northup Wy., Bellevue, WA 98004. \$24.95.

Word Attack. Davidson, Eckert. Builds vocabulary through multiple-choice quiz, sentence completion exercises, and an arcade game. Nine levels of word difficulty. Davidson and Associates, 6069 Groveoak Pl., Ste. 2, Rancho Palos Verdes, CA 90274. \$49.95.

Strategy

AirSim-1. Machine language flight simulator in 3-D with six landing fields and optional instrument flying mode. Mind Systems, Box 506, Northampton, MA 01061. \$40.

Black Jack Strategy. Wazaney. Strategy tables, simulator, and tutor, plus free fast DOS loader program and an apology for use of masculine pronoun throughout the documentation. Play-mode dealer's tough to beat. Soft Images, 200 Rt. 17, Mahwah, NJ 07430. \$69.95.

Casino. Five hi-res games, Vegas-style: blackjack, baccarat, keno, poker, and roulette. DataMost, 8943 Fullbright Ave., Chatsworth, CA 91311. \$39.95. 10/82.

• **Castle Wolfenstein.** Warner. First game to fuse successfully best elements of home-arcade and adventure. Escape from Nazi stronghold, finding and taking secret plans. Room layout changes with each new game. Enemy speaks, in German. Muse, 347 N. Charles St., Baltimore, MD 21201. \$29.95.

10/81.

• **Computer Baseball.** Merro, Avery. Remarkable programming feat, simulating individual player abilities from the teams of thirteen famous World Series. Can enter and play teams of your own creation. Strategic Simulations, 465 Fairchild Dr., Ste. 108, Mountain View, CA 94043. \$39.95. 9/81.

Cosmic Balance. Design your own ships and create your own space fleet. Tactical space game that's fast and easy to play. Strategic Simulations, 465 Fairchild Dr., Ste. 108, Mountain View, CA 94043. \$39.95. 11/82.

Cytron Masters. Bunten. Fast-paced strategy in real-time; plays much like football. Rates high in excitement and intelligence. Strategic Simulations, 465 Fairchild Dr., Ste. 108, Mountain View, CA 94043. \$39.95. 10/82.

• **Flight Simulator.** Artwick. Utilizes aerodynamic equations and airfoil characteristics for realistic simulation of takeoff, flight, and landing. SubLogic, 713 Edgebrook Dr., Champaign, IL 61820. \$33.50.

Flip Out. Huskey. Drop marbles through the top of a maze, activating traps to free your marbles and trap your opponent's. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. \$29.95.

Galactic Gladiators. Reamy. Easy and enjoyable tactical simulation. Suit up and arm your fighters for ten different scenarios. High speed for a strategy game. Strategic Simulations, 465 Fairchild Dr., Ste. 108, Mountain View, CA 94043. \$39.95. 8/82.

Gin Rummy. Carpet. Play against computer. Hi-res cards can change position in hand; your entire hand is visible. Space bar allows you to change your mind when discarding. DataMost, 8943 Fullbright Ave., Chatsworth, CA 91311. \$29.95. 6/82.

Hi-Res Computer Golf. Aronoff. A masterpiece of skill testing, judgment, strategy, and visual acuity. One of the few computer sports simulations that itself requires athletic dexterity. Avant-Garde, Box 30160, Eugene, OR 97403. \$29.95. 2/82.

• **Microgammon II.** Competition program for learning, practice, and improvement of backgammon skills. Tournament play. Softape, 5547 Satsuma Ave., North Hollywood, CA 91601. \$19.95. 2/81.

Pandemonium. Wazaney. Solitaire-poker word game with 6,000-word dictionary, scoring display, and player-selectable clock. Soft Images, 200 Rt. 17, Mahwah, NJ 07430. \$39.95.

Rendezvous. Huntress. Space shuttle simulation in 3-D, created by senior scientist at JPL. Orbit earth, match orbit, and dock with space station. Authentic, demanding. Edu-Ware, Box 22222, Agoura, CA 91301. \$39.95. 7/82.

RobotWar. Warner. Strategy game with battling robots is teaching device for programming. Muse, 347 N. Charles St., Baltimore, MD 21201. \$39.95. 1/81.

• **Sargon II.** Spracklen, Spracklen. Computer chess game with seven levels of play. Hayden, 50 Essex St., Rochelle Park, NJ 07662. \$34.95.

S.E.U.I.S. Combines two game genres. Build the ships and create your fleet like in a strategy game; actual ship-to-ship combat is like a shoot-'em-up arcade game. Variety of scenarios. Strategic Simulations, 465 Fairchild Dr., Ste. 108, Mountain View, CA 94043. \$39.95.

Space Vikings. Robbins. Subtitled "A Graphic 3D Tactical Simulation of Space Combat in the Distant Future." Raid the planets of twenty star systems in your Imperial battlewagon, gathering loot and establishing bases. SubLogic, 713 Edgebrook Dr., Champaign, IL 61820. \$49.95.

Spitfire Simulator. Air flight simulator—Spitfire in combat with German Aces—with 3-D scenery and moving target aircraft. Mind Systems, Box 506, Northampton, MA 01061. \$40. 12/82.

Warp Factor. Space war game featuring twelve starship designs representing five galactic empires, with possible scenarios ranging from skirmishes to galactic war. Extremely challenging. Strategic Simulations, 465 Fairchild Dr., Ste. 108, Mountain View, CA 94043. \$39.95. 7/81.

In Search of the Ultimate Treasure . . . The Mask of The Sun

"... my quest for the Mask drove me from the mountains of Tibet to this Mexican jungle. My name is Dakota Smith, and I'm dying from the Mask's curse. But the Mask may also contain the cure I need. That's it! I'll put the Mask on. Wait. It's not right. It's killing me . . . I must learn how to use it or die . . ."

Get set for the best adventure graphics in ULTRAvision®. With exciting travel sequences and special effects. Face certain death at every turn as you search for the mythical Mask to save yourself and escape the Pyramids alive! Enjoy non-stop action in super animation, with split-second transformations that will literally blow you away. Don't wait another minute to start your own quest for the Mask of The Sun.

WARNING: Wear With Extreme Caution

Suggested List \$29.95
Distributor inquiries welcome
One disk. Two sides.

—ULTRASOFT—

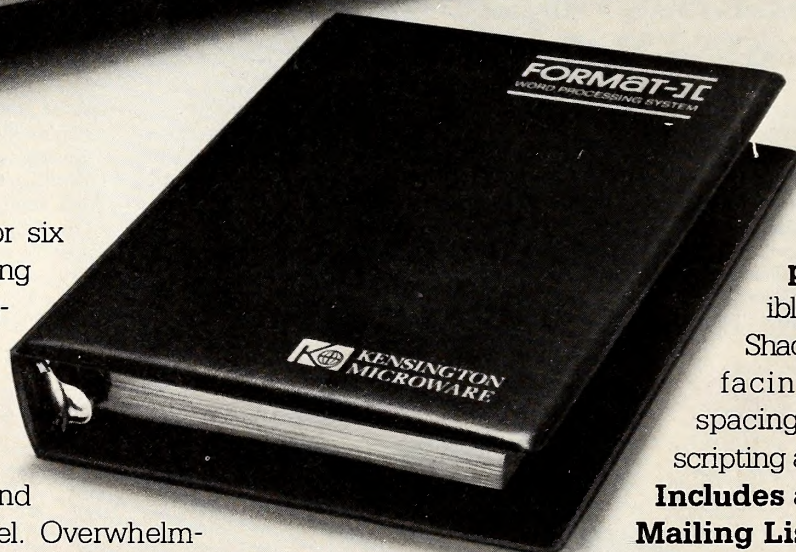
INCORPORATED

24001 Southeast 103rd St., Issaquah, WA 98027 (206) 392-1353

Requires 48K Apple II, 1 disk drive, DOS 3.3.
Apple is a registered trademark of Apple Computer, Inc.



Format II.TM Word processing so advanced anyone can use it.



Format II was tested for six months in the demanding arena of Wall Street. Distributed by local dealers to law firms, financial institutions, and the like, Format II was used by secretaries and non-technical personnel. Overwhelmingly, Format II was recognized as one of the easiest and most effective word processing systems available *in any form*.

Here's why Format II is unique among word processing programs:

What you see is what you get. Format II performs virtually any editing and formatting function you can imagine and displays on the screen the text exactly as it will print out—paragraphs, underlining, justification, page breaks.

Simple to Use. You edit and format text with single key strokes. "D" for delete, "E" for edit, "I" for insert, "J" for justify, etc. Easy-to-remember commands because they make sense.

It supports all printers compatible with the Apple. Shadow printing, bold-facing, proportional spacing, sub- and superscripting are all available.

Includes a sophisticated Mailing List. Stores and retrieves names and addresses which may be printed on labels or incorporated into documents. Powerful "logic" commands allow you to select only those records which match specified criteria.

And more. Format II is lightning fast and menu driven. Add them all together and it's clear why Format II has generated such enthusiasm. Now, at a cost of \$250, you *too* can buy the best.

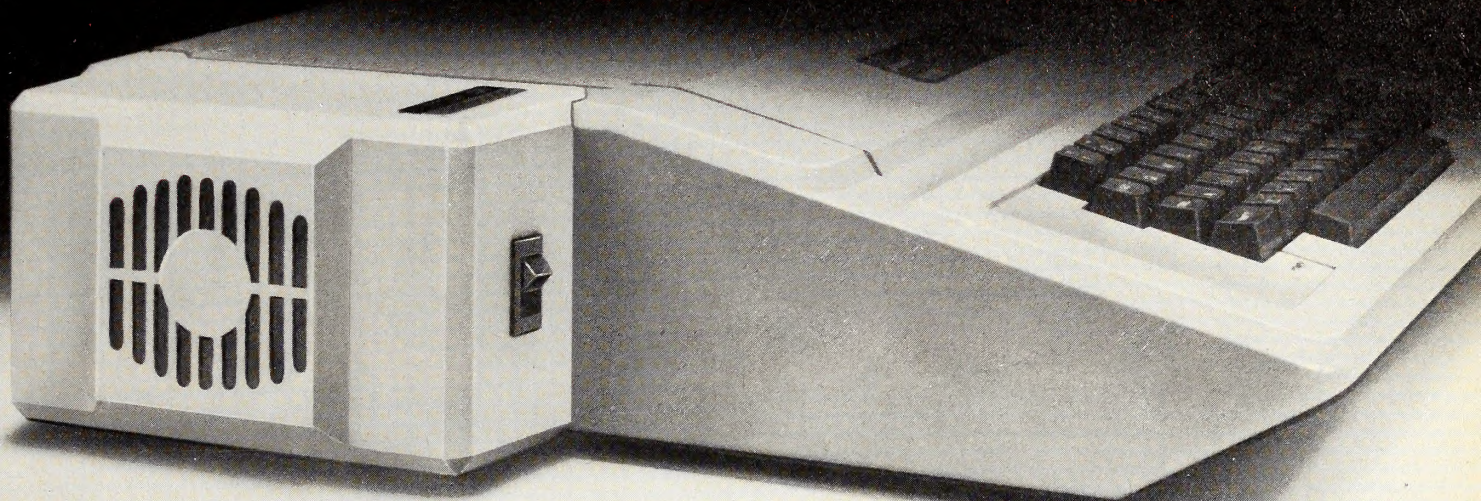
Format II is available from most local dealers. If not, ask them to contact us, or order directly and receive a 30 day money-back guarantee.

Kensington Microware Ltd., 919 Third Ave.
New York, NY 10022, (212) 486-7707



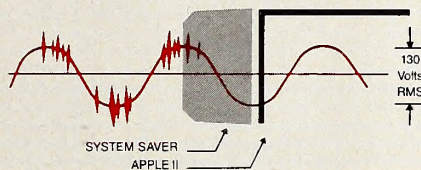
System Saver™

The most important peripheral for your Apple II.



For Line Surge Suppression

The SYSTEM SAVER provides essential protection to hardware and data from dangerous power surges and spikes.

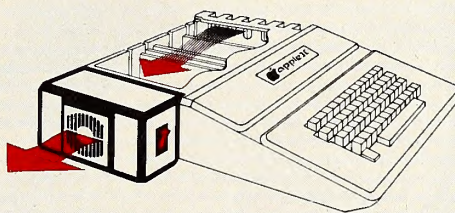


By connecting the Apple II power input through the SYSTEM SAVER, power is controlled in two ways: 1) Dangerous voltage spikes are clipped off at a safe 130 Volts RMS/175 Volts dc level. 2) High frequency noise is smoothed out before reaching the Apple II. A PI type filter attenuates common mode noise signals by a minimum of 30 dB from 600 khz to 20 mhz, with a maximum attenuation of 50 dB.

For Cooling

As soon as you move to 64K RAM or 80 columns on your Apple II you need SYSTEM SAVER.

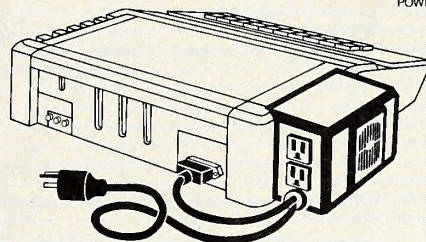
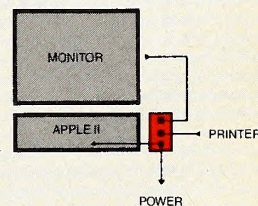
Today's advanced peripheral cards generate more heat. In addition, the cards block any natural air flow through the Apple II creating high temperature conditions that substantially reduce the life of the cards and the computer itself.



SYSTEM SAVER provides correct cooling. An efficient, quiet fan draws fresh air across the mother board, over the power supply and out the side ventilation slots.

For Operating Efficiency

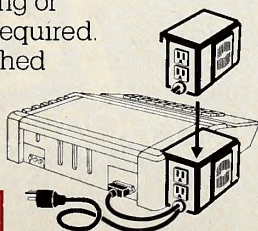
SYSTEM SAVER contains two switched power outlets. As shown in the diagram, the SYSTEM SAVER efficiently organizes your system so that one convenient, front mounted power switch controls SYSTEM SAVER, Apple II, monitor and printer.



The heavy duty switch has a pilot light to alert when system is on. You'll never use the Apple power switch again!

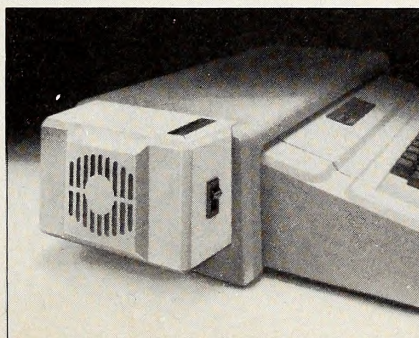
Easy Installation

Just clips on.
No mounting or hardware required.
Color matched to Apple II.



PATENT PENDING

Compatible with Apple Stand



Suggested Retail
One Year Warranty **\$89⁹⁵**

Kensington Microware Ltd.
919 Third Avenue
New York, NY 10022
(212) 486-7707

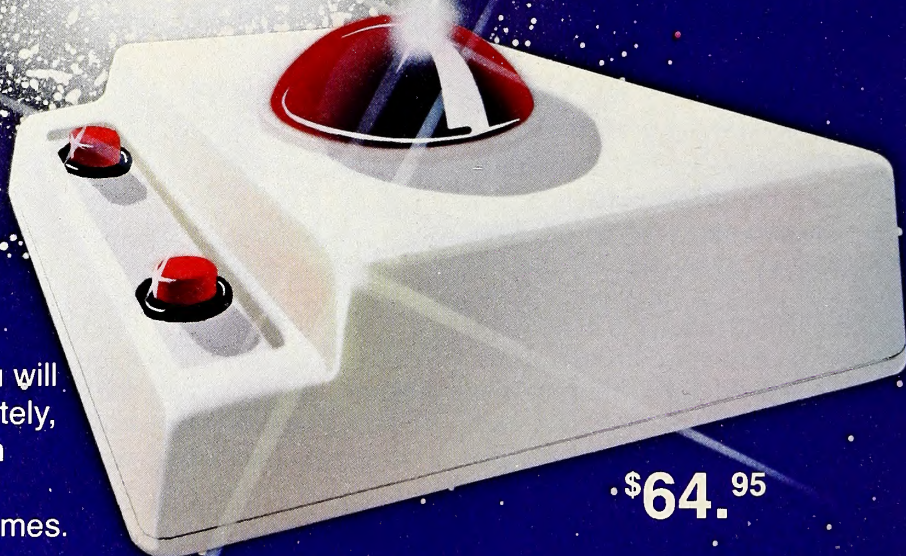
**KENSINGTON
MICROWARE**

the game control
you've been waiting for

TRACK BALL

TG Products, the oldest and largest manufacturer of accessories for personal computers, brings you fantastic control and versatility with the new TRACK BALL control. You will be amazed at how accurately, quickly and easily you can position screen objects in advanced arcade-level games.

TRACK BALL is designed for years of reliable, active play and is produced of the highest quality components. Models are available now for your Atari*, Apple II*, and IBM* personal computers. Ask for them at your dealer or order direct from TG Products, 1104 Summit Ave., Suite 110, Plano, Texas 75074. Telephone (214) 424-8568.



\$64.⁹⁵

TG
PRODUCTS

Allow two weeks for shipment.
All mail orders add \$2.00 for postage
and insurance.
Texas residents add 5% sales tax.

*Atari, Apple and IBM are registered trademarks of Atari Inc., Apple Computers, Inc. and International Business Machines Corporation, respectively.

Utility

Apple-Cillin. Hardware diagnostic tests for all RAM and ROM, plug-in cards, cp registers, disks; nine video test patterns. XPS, 323 York Rd., Carlisle, PA 17013. \$49.95.

Apple Mechanic. Kersey. Multiple utility disk with shape editor, custom typefonts, byte rewriter, and tricks to facilitate music, text, and hi-res generation. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. \$29.50. 9/82.

Apple Spice. Kosak, Fox. Powerful Applesoft expansion utility using & and usr functions. Easily incorporated programming routines. Adventure Intl., Box 3435, Longwood, FL 32750. \$29.95. 5/82.

Audex. Collection of utilities to create, edit, and play back your own sounds for your own programs; in Basic and assembly language. Sirius, 10364 Rockingham Dr., Sacramento, CA 95827. \$29.95.

Bag of Tricks. Worth, Lechner. Four utility programs for dumping and examining a raw track, sector editing, reformatting tracks, and repairing damaged disk catalogs. Quality Software, 6660 Reseda Blvd., Ste. 105, Reseda, CA 91335. \$39.95.

Bug Byter. Screen-oriented mnemonic debugging tool with resident assembler and disassembler. Displays contents of accumulator and X and Y registers. Computer-Advanced Ideas, 1442A Walnut St., Ste. 431, Berkeley, CA 94709. \$47.50.

DOS Boss. Kersey, Cassidy. Utility to change, shorten DOS commands; customize catalog. Good ideas and witty presentation. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. \$24. 10/81.

The DOS Enhancer. New incarnation of the *Universal Boot Initializer*, featuring a speed increase of up to 500 percent and DOS user-definable and data disk init commands. S&H, 58 Van Orden Rd., Harrington Park, NJ 07640. \$69.95.

DOS Tool Kit. Excellent utility package; Apple II assembler-editor system and Applesoft tool kit. Edit, assemble machine language programs; write, edit Basic programs. Simplifies graphics, includes character generator. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$75. 10/81.

GPLE. Enhanced version of the *Program Line Editor*. Edit everything on a line, line by line, or on a range of lines; plus search for strings. Synergistic, 830 N. Riverside Dr., Ste. 201, Renton, WA 98055. \$60.

The Inspector. Sefton. Fast, flexible utility for examination of disk sectors, directory, and track-sector lists. Salvage blown disks, change data, delete DOS. Omega, 222 S. Riverside Plaza, Chicago, IL 60606. \$49.95. 11/81.

LISA 2.5. Hyde. Long-time popular assembler with extended mnemonics and more than thirty opcodes. Sierra On-Line, 36575 Mudge Ranch Rd., Coarsegold, CA 93614. \$79.95.

Master Diagnostics. Twenty-four tests that check your Apple for component malfunctions and suggest replacement. Software Source, 17905 Ventura Blvd., Encino, CA 91316. \$69.95. 8/82.

Merlin. Does assembly language programming with a dozen editing commands and twenty-eight pseudo-ops. Southwestern Data, 10761-E Woodside Ave., Santee, CA 92071. \$64.95.

• **Program Line Editor.** Program development and modification program with more than eleven editing commands, listing control, lower case, and programmable cursor control. Synergistic, 830 N. Riverside Dr., Ste. 201, Renton, WA 98055. \$40.

• **The Routine Machine.** Meyer. Programming tool that extends Applesoft. Library of routines; install your own; no programming knowledge necessary. Southwestern Data, 10761-E Woodside Ave., Santee, CA 92071. \$64.95. 12/82.

• **Super Disk Copy III.** Hartley. Easy-to-use menu-driven software utility; transfers all types of DOS

files. Sensible, 6619 Perham Dr., W. Bloomfield, MI 48033. \$30. 10/81.

TASC. Peak, Howard. Applesoft compiler. User controls locations of three memory compartments. Microsoft, 10700 Northup Wy., Bellevue, WA 98004. \$150. 9/81.

Utility City. Kersey. Twenty-one utilities on one disk. Beagle Bros, 4315 Sierra Vista, San Diego, CA 92103. \$29.50.

Word Processing

Apple Writer II. Lutus, Finstead. Written in word-processing language. Additional editing features and functions menu; continuing features and functions menu; continuous readout of character count and length. Apple/Special Delivery, 20525 Mariani Ave., Cupertino, CA 95014. \$150.

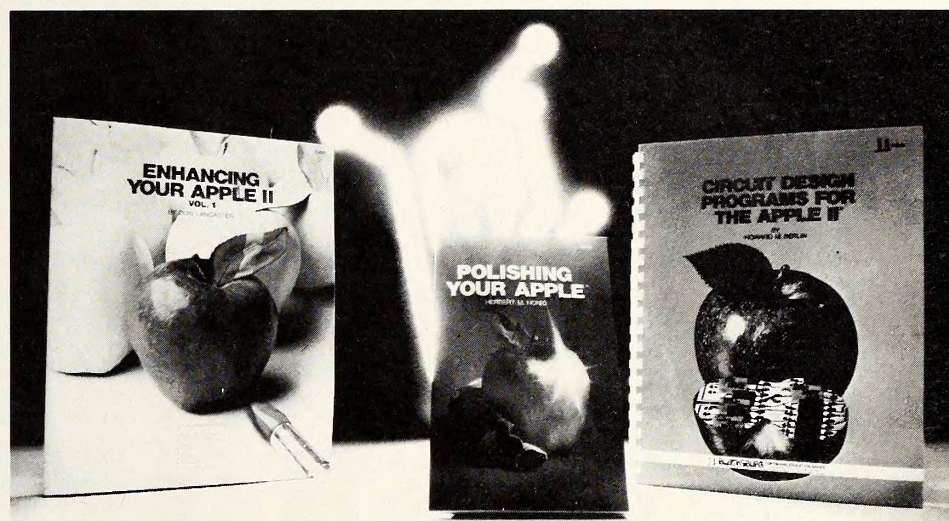
Apple Writer IIe. Shift, shift-lock, and tab with the keys of the same name, four-arrow cursor control,

and a delete key. Takes full advantage of the IIe features. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$195.

Apple Writer Extended Features. Malachowski, Cooper. Enables production of multiple copies of *Apple Writer* files and insertion of variables; converts Applesoft programs to *Apple Writer* and vice versa. Brillig Systems, 10270 Fern Pool Ct., Burke, VA 22015. \$34.95. 7/81.

Bank Street Writer. Kusmiak, Bank Street College of Education. This one is designed for use by the whole family. Universal search and replace, inverse highlighting, and word wrap are standard. Upper and lower case without hardware. On-disk tutorial is included. Takes advantage of memory, keyboard on IIe, if you have one. Broderbund, 1938 4th St., San Rafael, CA 94901. \$69.95.

Dictionary. Expandable 25,000-word spell checking program for *Superscribe*, *Screen Writer*, *Apple PIE*, and *Apple Writer*. Instant look-ups and corrections. Sierra On-Line, 36575 Mudge Ranch Rd.,



BRIGHT IDEAS TO HELP YOU USE THE APPLE II®



SAMS BOOKS

Sams sheds new light on the Apple II with these easy-to-understand books.

POLISHING YOUR APPLE shows you how to write, file and print programs with the Apple II. No. 22026, \$4.95

THE APPLE II CIRCUIT DESCRIPTION provides a detailed circuit description of the Revision I Apple II motherboard, keyboard and power supply. No. 21959, \$22.95 (tentative)

INTERMEDIATE-LEVEL APPLE II HANDBOOK is a hands-on aid for exploring the entire internal firmware of the Apple II. No. 21889, \$14.95 (tentative)

ENHANCING YOUR APPLE II explains how to mix text, LORES and HIRES anywhere on the screen, and how to create 3-D graphics. No. 21846, \$15.95.

CIRCUIT DESIGN PROGRAMS FOR THE APPLE II shows you how programs display in applications for periodic waveform, rms and average values, design of matching pads, attenuators, heat sinks and more. No. 21863, \$15.95.

APPLE INTERFACING brings you tested interfacing circuits that work, plus the necessary BASIC software to connect the Apple II to the outside world. No. 21862, \$10.95.

MOSTLY BASIC APPLICATIONS FOR YOUR APPLE II, Books 1 and 2, includes over fifty debugged BASIC programs for the Apple II. Nos. 21789 and 21864, \$12.95 each.

MAIL TO: HOWARD W. SAMS & CO., INC.
4300 West 62nd St., P.O. Box 7092,
Indianapolis, IN 46206

	QUANTITY
POLISHING YOUR APPLE	No. 22026 \$4.95
THE APPLE II CIRCUIT DESCRIPTION	No. 21959 \$22.95
INTERMEDIATE-LEVEL APPLE II HANDBOOK	No. 21889 \$14.95
ENHANCING YOUR APPLE II	No. 21846 \$15.95
CIRCUIT DESIGN PROGRAMS FOR THE APPLE II	No. 21863 \$15.95
APPLE INTERFACING	No. 21862 \$10.95
MOSTLY BASIC APPLICATIONS FOR YOUR APPLE II, BOOK 1	No. 21789, \$12.95
BOOK 2	No. 21864, \$12.95

Amount of Order \$
Add Handling Costs \$2.00

Add Local Sales Tax Where Applicable \$

Total Amount of Order \$

Payment Enclosed ☐ Check ☐ Money Order ☐ VISA ☐ MasterCard

Account No _____

Expiration Date _____

Name (Print) _____

Signature _____

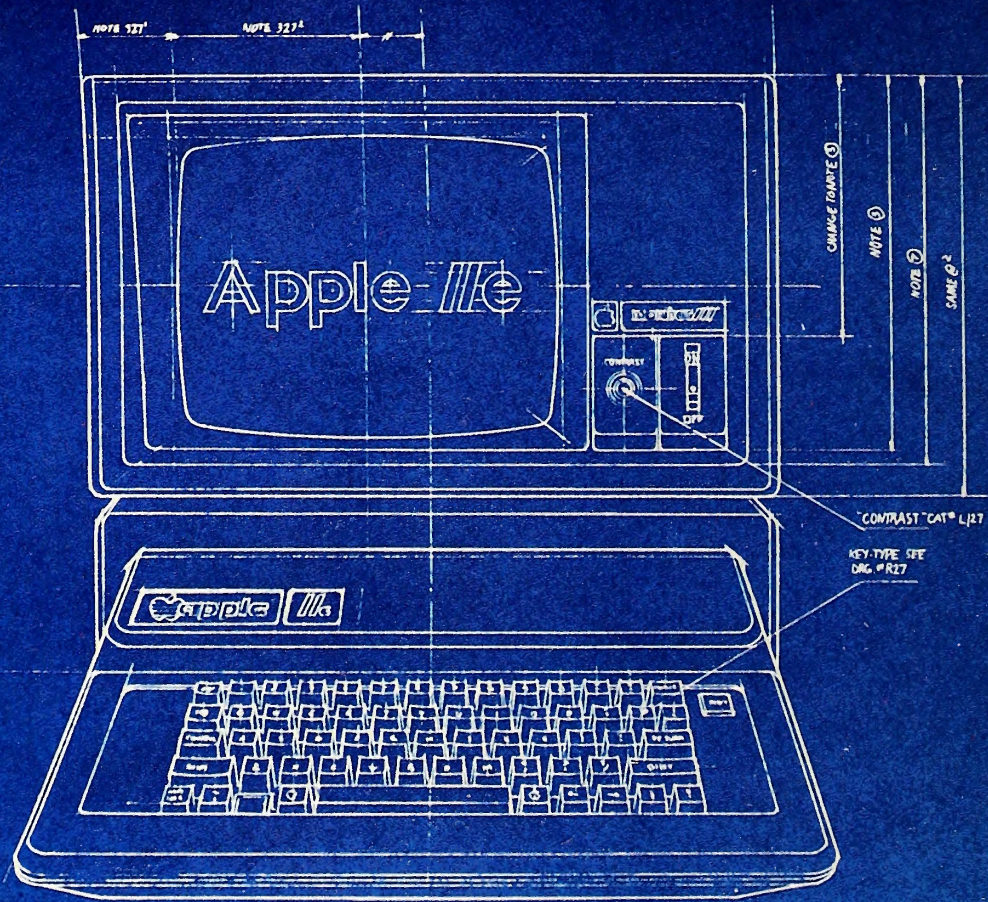
Address _____

City _____ State _____ Zip _____

Call toll-free 800-428-3696 or 317-298-5566 for the name of your local Sams Book outlet or to order by phone (give Sams Operator the code number in the box below). Offer good in USA only and expires 5/31/83. Prices subject to change without notice.

AD260

It's the same old
Apple II.



For years, people have been trying to build a better Apple® II. It finally happened.

Meet the Apple IIe, an impressive new version of a most impressive machine.

The "e" means enhanced.
Which means a bundle of new features:

A standard memory of 64K
(versus 48K) that's easily

expandable. So you can create fatter files and crunch larger numbers of numbers.

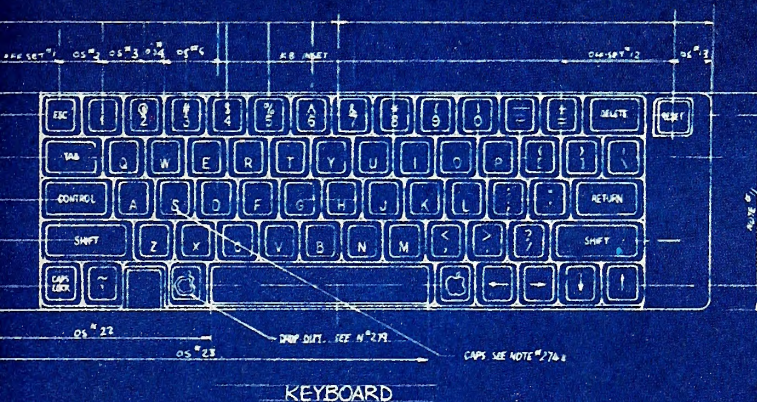
A new, improved keyboard, with a complete set of ASCII standard characters. Plus full cursor controls, programmable function keys, and a rapid auto-repeat feature built into every key on the board.

Both upper and lower case

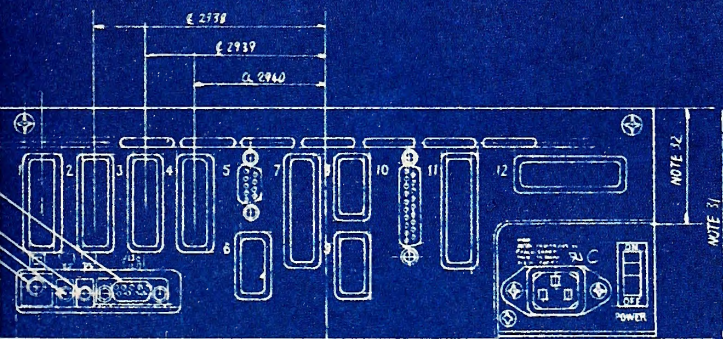
characters. (And if you want to see more of them on the screen at one time, a low cost 80-column text card is available.)

Improved peripheral ports. Which make it a lot easier to connect and disconnect game controllers, printers and all those other wonderful things that go with an Apple Personal Computer.

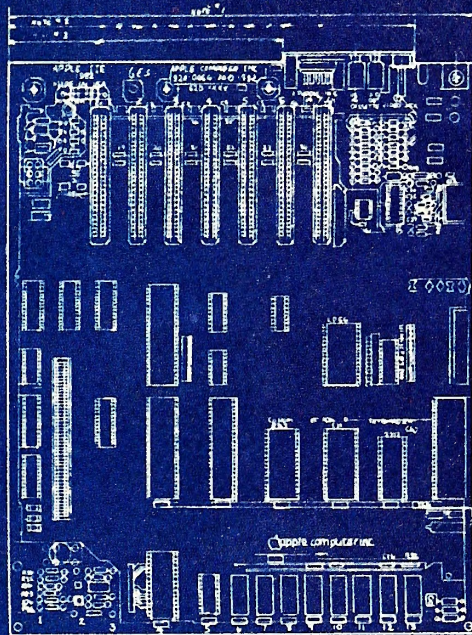
Except for the front, back and inside.



KEYBOARD



BACK PANEL & PERIPHERAL PORTS



MOTHER BOARD

Self-diagnostics. That's a special feature that makes it easy to give your computer a thorough check-up.

Plus an even more reliable design. Achieved by reducing the number of components — which is to say, the number of things that could go wrong.

And bear in mind, the IIe still has all those other virtues that made the Apple II so very popular. Including access to more accessories, peripheral devices and software than any other personal computer you can buy.

So visit any of our over 1300

authorized dealers, and see the newest Apple for yourself.

Like the original, it's rather extraordinary. But then some things never change.



The most personal computer.

Coarsegold, CA 93614. \$99.95.

EasyWriter. Word processor; choose 40 or 80 column version. Information Unlimited, 2401 Marinship Wy., Sausalito, CA 94965. \$99.95.

Executive Secretary. Editing, printing, and form letters, plus mail merge and electronic mail system. SofSys, 4306 Upton Ave. S., Minneapolis, MN 55410. \$250.

Format II. Word processor with logic-sorting mailing list. Justifies type, wraps text; has one-key editing, menu prompting. Kensington Microwave, 300 E. 54th St., Ste. 3L, New York, NY 10022. \$250.

Letter Perfect. Format-flexible word processor with ability to send control codes within body of program. Works with database files from *Data Perfect*. LJK, Box 10827, St. Louis, MO 63129. \$149.95.

Magic Window II. 40, 70 (in hi-res), or 80 columns in this expanded version. Compatible with Pascal 80-column. With user-tailored, fast menu; underlining; global search and replace. Ite version uses all 64K, more if you have it. Artsci, 5547 Satsuma Ave., North Hollywood, CA 91601. \$149.95.

Perfect Writer. Powerful, easy-to-use word processor. Advanced document design features indents, subheads, footnotes, quotations. Requires Z-80 card and 80-column board. Perfect Software, 1400 Shattuck Ave., Berkeley, CA 94709. \$389.

PIE Writer. Business processor that allows 9,999 pages. With word deletion, auto indent, spooling, and typeahead buffer. Hayden, 50 Essex St., Rochelle Park, NJ 07662. \$149.95.

PowerText. Does memos, letters, reports, and manuscripts without formatting each time. Good balance of automatic and user-defined functions. Beamman Porter, Pleasant Ridge Rd., Harrison, NY 10528. \$199.

ScreenWriter II. Kidwell, Schmoyer. Formerly *SuperScribe II*. No extra hardware for lower case, 70-column display, printer spooling. Edits Basic, text, and binary files; complete search and replace. Ite version uses eighty columns, natural u&l, shift key, and all available memory. Sierra On-Line, Sierra On-Line Building, Coarsegold, CA 93614. \$129.95.

Sensible Speller. Spell-checking program sports listable 85,000 words, extensible up to 110,000 words. Recognizes contractions, gives file word counts, incidence of a single word, and number of unique words. High marks for clear, logically organized documentation and simplicity of operation. Sensible, 6619 Perham Dr., W. Bloomfield, MI 48033. \$125. 1/82.

Super-Text Home/Office (40/56/70). Zaron. Get 40, 56, or 70 columns without hardware. Design your own character sets. Basics of text editing. Character-oriented, floating-cursor edit with add, change, print, and preview modes. Muse, 347 N. Charles St., Baltimore, MD 21201. \$125.

Super-Text Professional (40/80). Automatic eighty-column and upper and lower case on equipped Ite; with appropriate equipment on II Plus. On-screen formatting and on-line help reference guides on Ite. Muse, 347 N. Charles St., Baltimore, MD 21201. \$175.

Videx Preboot Apple Writer. Eighty-column display for *AppleWriter II* with upper and lower case input from keyboard Enhancer II and Videoterm compatibility. Videx, 897 N.W. Grant St., Corvallis, OR 97330. \$19.

Word Handler II. Elekman. Wonderfully simple program with straightforward documentation. Allows folded paper printout for two-sided printing. Silicon Valley Systems, 1625 El Camino Real, Ste. 4, Belmont, CA 94002. \$199. 11/82.

WordStar. Screen-oriented, integrated word processing system in CP/M. Requires Z-80 card. MicroPro, 33 San Pablo Ave., San Rafael, CA 94903. \$495.

Zardax. Philips. Highly recommended. Single program includes all standard word processing features with considerable extras including communication by modem. Computer Solutions, Box 397,

Mount Gravatt, Queensland, Australia. In the U.S.: Action-Research Northwest, 11442 Marine View Dr. S.W., Seattle, WA 98146. \$295. *Zip-Comm* modem program, \$80. 11/82.

Apple III

Access III. Communications program for time sharing and standalone tasks; accesses remote information services, minis, and mainframes. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$150.

Apple Business Basic. High-level structured programming language for the III. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$125.

Apple III Business Graphics. BPS. General-purpose graphics program draws line graphs, vertical or horizontal bar graphs in three formats, overlays, and pie charts in sixteen colors. Handles continuous or discrete data; curve-fitting capabilities. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$175.

Apple Writer III. Lutus. Uses WPL (word processing language) to automate the process of text manipulation and document creation. Adjusts print format during printing; translates from typewriter shorthand to English or other language and back again. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$225.

Basic Extension. Extension of Business Basic using disk, array, and utility routines as invokable modules. Machine language; nonmodifiable. Foxware, 165 W. Mead Ave., Salt Lake City, UT 84101. \$95.

Catalyst. Allows boot from hard disk; transfers all programs to ProFile. Quark Engineering, 1433 Williams, Ste. 1102, Denver, CO 80218. \$149.

Data Manager III. Expansion of *Data Factory* allowing 32,000 records per file. Customizable screen display and printing. Micro Lab, 2310 Skokie Valley Rd., Highland Park, IL 60035. \$750.

Data Reporter. Flexible database management system. Does form letters, patient files, labels, calculations, inventories, and employment records. Synergistic, 830 N. Riverside Dr., Ste. 201, Renton, WA 98055. \$220.

dBase II. Speedy relational database management system. Requires Z-80 card. Ashton-Tate, 9929 Jefferson Blvd., Culver City, CA 90230. \$700.

DeskTop Plan. Sophisticated financial analysis and modeling tool; allows up to four data series on a line chart. More than an electronic spreadsheet. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. \$300.

EASy. Executive accounting system with accounts receivable, accounts payable, and general ledger. Denver Software, 14100 E. Jewell Ave., Ste. 15, Aurora, CO 80012. \$749.95.

Hardisk Accounting Series, 2.0. General ledger, accounts receivable, and accounts payable each handle up to 32,776 customers or accounts; inventory features five methods of evaluation. Also payroll, management analysis, and mailing labels. Great Plains Software, 123 N. 15th St., Fargo, ND 58102. \$395 to \$595 per module.

Lexicheck. Spelling checker that runs from inside *Word Juggler*. Thirty thousand-word dictionary; add your own words. Eight thousand-word legal dictionary disk also available. Quark Engineering, 1433 Williams, Ste. 1102, Denver, CO 80218. \$145.

Mail List Manager. Generates, stores, sorts, edits, and prints mailing list files. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$150.

Merge III. Files utility package allowing data files created by *Apple Writer III* or *Personal Filing System* to be merged with any document created by *Apple Writer III*. Forsythe Computers, 521 Olive St., St. Louis, MO 63101. \$50.

Micro/Terminal. Access any in-house or remote database; set up and log only once. Built-in editor or edit off-line. Microcom, 1400A Providence Hwy., Norwood, MA 02062. \$99.95.

Pascal. Program preparer with editor, compiler, disassembler, linker, filer, and system library. Features

cursor control, text modeling, and formatting. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$250.

PFS:File. Page, Roberts. Form-oriented information management system allows storage and retrieval of up to 32,000 entries. Software Publishing, 1901 Landings Dr., Mountain View, CA 94043. \$175.

PFS:Graph. Chin, Hill. Works alone or interfaces with *PFS* databases and *VisiCalc* files. Produces bar, line, and pie charts merging data from several sources. Software Publishing, 1901 Landings Dr., Mountain View, CA 94043. \$125.

PFS:Report. Page. Generates reports; performs functions that require sorting, calculating, and manipulating data filed with *PFS*. Software Publishing, 1901 Landings Dr., Mountain View, CA 94043. \$125.

Program Writer/Reporter. Basic database code generator that creates interactive, standalone programs. Vital Information, 7899 Mastin Dr., Overland Park, KS 66204. \$200.

Quick File III. Personal index card or filing system. Fifteen fields; file as long as disk allows; can be put on ProFile. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$100.

Senior Analyst III. Corporate planning tool for developing budgets, forecasts, and other financial models without knowledge of programming; automatically formats reports and documents assumptions in plain English. Apple, 20525 Mariani Ave., Cupertino, CA 95014. \$350.

State of the Art General Ledger and Business Modules. Standalone interfaceable modules for twelve accounting periods. *General Ledger* handles 470 accounts and allows entry of 100 transactions before updating files. *Budget and Financial Reporting* module extends account number to nine digits, custom-designs reports, does previous-year comparisons, and handles two, four, twelve, and thirteen period accounting. *Accounts Receivable* prints monthly statements and allows for twenty-five customers and divisional reporting up to six divisions. *Accounts Payable* handles 325 vendors and prints monthly check disbursement register; eight different bank accounts. *Inventory Control* allows up to 500 items per disk; 5,000 total; performs physical inventory count sheet and variant report. State of the Art, 3183A Airway Ave., Costa Mesa, CA 92626. *General Ledger*, \$595; modules, \$495.

VersaForm. Landau. State-of-the-art business forms processor. Does invoicing, purchasing orders, mailing lists, client billing. Powerful, complex, worth getting to know. Hard disk compatible. Applied Software Technology, 14128 Capri Dr., Los Gatos, CA 95030. \$495. 8/82.

VisiCalc Advanced Version. Designed for corporate-wide modeling applications; allows managers to develop sophisticated templates that can be filled in by novice users. Numerous other new features, including on-screen help, IRR and calendar functions, macro facility, variable column widths, locked cell values, and hidden cell contents. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. \$400.

VisiCalc III. Software Arts, Bricklin, Frankston. Just like it sounds; expanded memory, lower case, 80 columns. Four-way cursor movement. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. \$250.

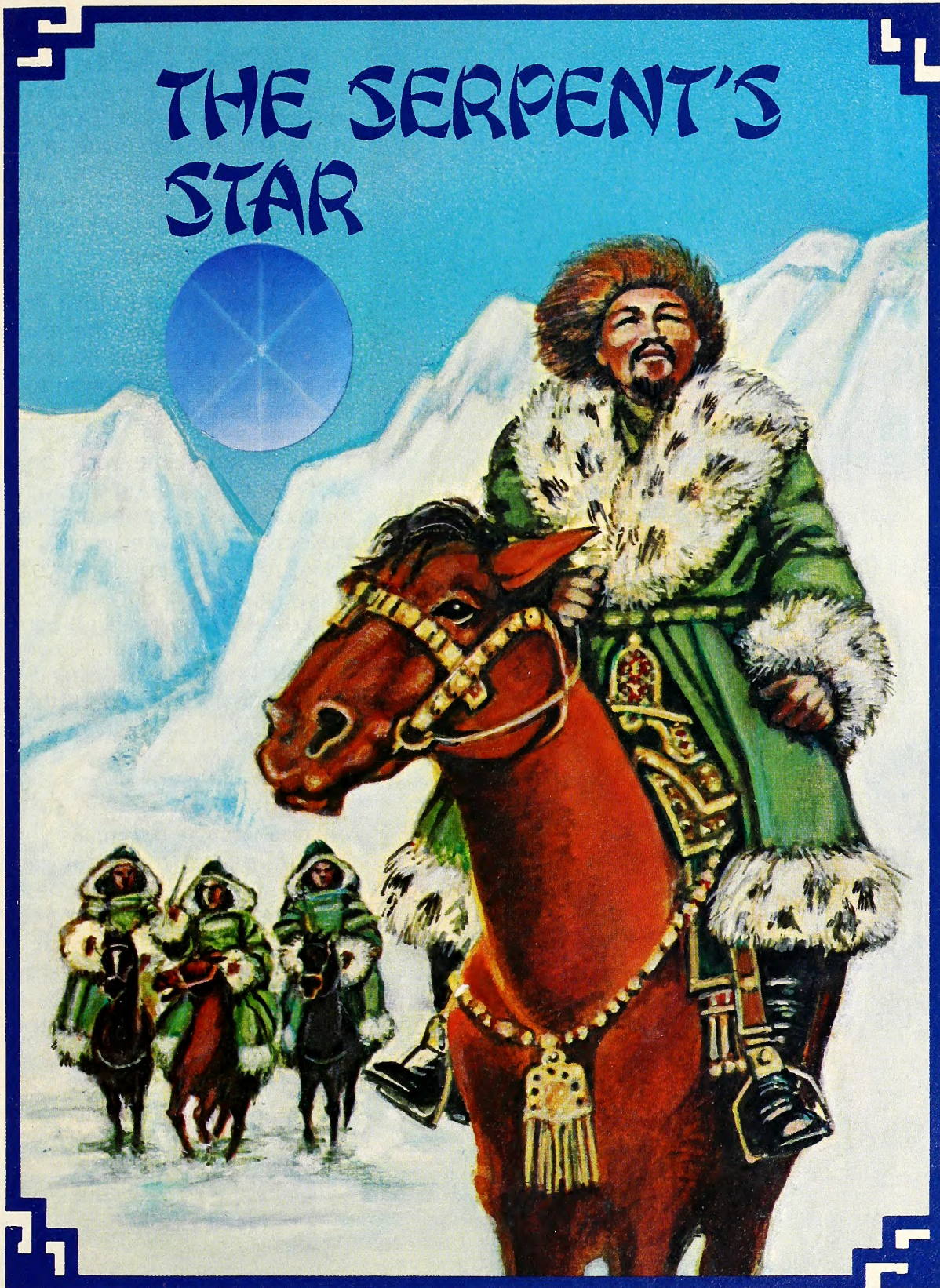
VisiSchedule. Critical path PERT schedule planner. VisiCorp, 2895 Zanker Rd., San Jose, CA 95134. \$300.

Word Juggler. Gill. Word processor makes use of upper and lower case keyboard, 80-column display, and expanded memory. Printout can be reviewed on screen prior to printing; multiple copies printed of selected pages. Quark Engineering, 1433 Williams, Ste. 1102, Denver, CO 80218. \$295. 12/82.

Word Weaver III. Fast word processor with unique feature: it can print out in shapes. Allows line spill-over, does insert and delete, prints multiple files. Synergistic, 830 N. Riverside Dr., Ste. 201, Renton, WA 98055. \$99.95. ■

SEEK THE GEM OF IMMORTALITY

THE SERPENT'S STAR



ANIMATION IN ULTRAVISION™!!! Fabulous graphics, full screen animation, sound effects and a wonderfully challenging adventure make this the graphics adventure of choice.

Requires 48K Apple II, DOS 3.3

Apple II is a Registered Trademark of Apple Computer, Inc.

This second in a series of daring and entertaining animated adventures takes Mac Steele into the mysterious and hostile Himalayas of Tibet.

One Disk, Two Sides

Suggested Retail: \$39.95

DOG BITES COMPUTER MAN BITES DOG



Have you ever seen a person take a bite out of a floppy disk?

If you don't subscribe to *Softline* you missed the boat. The sleazy canine pictured here is "The Dog of the Year." In the January 1983 issue of *Softline* we asked our readers to send us the names, in their opinions, of the worst computer games published in 1982. Believe us, there were some real dogs.

All hope is not lost for you, though. You can still find out the results of "The Dog of the Year" poll by sending us \$12 for a one-year subscription to *Softline* as soon as possible.

At the same time, you'll be getting the best magazine around devoted entirely to microcomputer games and related subjects. In *Softline*, you'll find reviews, news, tutorials, programs, contests, letters, a column on education, and the fantastically popular High Scores.

You'll have fun reading *Softline*, because that's what computer games are all about. It'll make you laugh and scream and howl.

It may even help you avoid a dog. It will definitely help to make you a winner.

Softline is a computer games magazine published six times a year by the same folks who bring you *Softalk*. Subscriptions cost \$12 a year.

If you're a computer game player then it's time you got on the gravy train. Subscribe to *Softline* and know the dogs before they put the bite on your Apple.

Send order with payment to:

SOFTLINE

Box 60
North Hollywood, CA 91603
(213) 980-5074

As an Apple owner, you're entitled to a free trial subscription to Softalk. If you've never received Softalk, merely fill out this card and mail it in. If you have received Softalk in the past, or are receiving it now, you can use this card to renew or to register a change of address.

☐ I'm a new Apple owner.

☐ I'm using this card to renew my subscription. Please find enclosed \$24 for a one-year subscription.

Apple Serial Number

Name Street Address

City State Zip

☐ Above is my new address. Below is my old address:

Name Street Address

City State Zip

Sign Me Up!



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY CARD

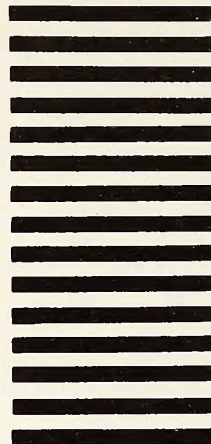
FIRST CLASS PERMIT NO. 673 NO. HOLLYWOOD, CA

POSTAGE WILL BE PAID BY ADDRESSEE

SOFTALK

P.O. Box 60

North Hollywood, California 91603



Polemic from a Fellow Pawn

As a subscriber to *Softalk* by default and part-time Apple user I find myself perusing Open Discussion for useful insights and tips on software or equipment. What I find immaterial, and occasionally disturbing, is the tendency of the editors, advertisers, and contributors to engage in flights of metaphysical fancy. This is often coupled to purportedly serious ethical wrangling over, first, the connection of a piece of software to the material universe (usually a game) and, second, the taking to task of the author or producer of such an entity for engaging in some sort of pandering, propagandizing, or other manifestation of moral turpitude.

The latest example is the hassle over *Spitfire Simulator* (which I have neither seen nor intend to buy), and it has been preceded by similar finger pointing and breast beating over such offerings as Muse's *RobotWar*. Do the editors of *Softalk* seriously believe there is a connection between actual war and a computer simulation? Does the management of Mind Systems Corporation seriously believe that the use of the term "warmonger" would refer to the players of a computer game, that is, in the *actual* sense?

I am willing to accept the notion of criticism of these products when there is a clear point of reference. For instance, if the graphics of a particular game are substandard, the point of reference would be the opinion of the reviewer who has presumably seen many games and has a point of reference from which to speak. Moreover, that point of reference may not be readily transferable into objective data.

As for the ethical poppycock and almost tearfully defensive responses—if anyone out there really thinks that hi-res robots, pixelish planes, and binary bimbos need to be justified, then we must, by all means, take Parker Brothers to task as the producers of *Monopoly*, that *Grand Guignol* of capitalism that's used to brainwash the young into complacent tools of the cryptofascist elite. Better still, let's go all the way to the bottom line and eradicate chess, war game of war games. Comrades, we can save the ranks of the poor proletarian pawns from being callously sacrificed at the whim of the evil king and queen! We will create a workers' paradise where all pawns will have equal rights to all shortages, and...

John Avelis, Jr., White Heath, IL

Saluting the General

Last February I purchased Sierra On-Line's *General Manager* and it has proven to be extremely useful to me in my business. I've used it for order entry, invoicing, accounts receivable, and a host of other applications. Now I've got the 2.0 version, and any bugs that may have existed in previous versions have been exterminated. In addition, the new version adds tremendous flexibility in reporting and the search speed is vastly improved. The manual is very clear and the program is versatile. My system is now up and running on a Corvus Omninet. I recommend it highly to other *Softalk* readers. William Kaufman, Long Island City, NY

Documentation Diatribe

There are software houses producing quality products. It is apparent from their programs and accompanying documentation. In my opinion, these companies are the ones that will still be in the marketplace five years from now. The difference between a well-written, well-edited, and thoroughly tested user manual and one that was put together as an afterthought gives me enough reason to purchase one program over another. The days are gone, or nearly so, of personal computer users tolerating programs that almost work and manuals that are rife with typos, misleading and confusing information, and slipshod writing and organization.

Because there are software companies producing quality products, I have a choice in purchasing software for my Apple. I will never buy a program marketed by a company that thinks so little of the user that it sells inadequate documentation, when, for the same money, I can purchase a program that instills confidence in the image projected from a well-written, well-presented manual.

Carol J. Manley, Issaquah, WA

Double Your Pleasure

I recently purchased *The Accountant* by Decision Support Software. My aim was to purchase an inexpensive piece of software that would allow access to my business transactions for my secretarial business. I required a system that would do more than balance a checkbook. I wanted one that would perform basic accounting functions and be reasonably priced. *The Accountant* has met these criteria for me.

Designed by E. Forman, who clearly demonstrates a keen perception of the user's needs, *The Accountant* utilizes the double-entry accounting method and requires the insertion of a key (series of pins) into the game I/O socket of the Apple II Plus. On first inclination I thought this would be too complicated for the novice. However, with just a few hours of reading the instruction manual and following the demonstration exercise, I recognized the power of the program. It not only keeps track of numerous balance sheets for user-defined accounts, but it also provides several options of printing account transactions. It provides codes and inverted pointers for quick retrieval of specially identified transactions or accounts. Outstanding billings can be tracked by identifying them with a code. By setting up group accounts, a profit and loss statement can be obtained. I find that the use of the calculator is quite convenient when calculations are required before dollar amounts can be entered during a transaction.

The double-entry accounting method allows

flexibility in defining accounts for specialized needs, and it was through *The Accountant* that I learned the importance and power of double-entry accounting. It's really not difficult.

At first I was not comfortable with inserting the key into the game socket each time I used the program. Mr. Forman suggested using a zero-force port extender. One end fits into the game socket, and the zero-insertion force receptacle mounts conveniently on the outside of the computer. In this way there is no need to go inside; and the key allows the user to make an unlimited number of copies for business or personal use. It's not at all inconvenient. *The Accountant* is an excellent program and well worth the price.

Theodore J. Roseman, Portage, MI

Eagle-Eyed Reading

We appreciate the careful review of the *Zardax* word processor by Peter Olivieri in the November '82 *Softalk*. Harking back to the feature article, we feel we have the eagle in a world filled with word processor turkeys. Although the re-

DISKETTES 3M Scotch® BRAND

AT SUPER LOW PRICES
FOR YOUR APPLE COMPUTER
Scotch® DISKETTES
ARE TESTED AND GUARANTEED
ERROR FREE
FILEWARE™ **Scotch®**
COMPATIBLE DISKETTE
AVAILABLE (TM APPLE COMPUTER)
APPLE CLUB MEMBERS WELCOME
WE SHIP WITHIN 24 HOURS

APPLE STACKER™

CREATES A WORK STATION
OUT OF ANY SURFACE FOR
YOUR APPLE II. CATALOG FREE



MASTERCARD • VISA • C.O.D.
WE PAY SHIPPING CHARGES

TM BEREVTON



CALL TOLL FREE
800-922-8193
IN CA 800-468-1068



Tayco Business Forms
Computer Supplies
P.O. Box 605
Newbury Park, CA 91320

PLAY THE SYSTEM THAT MADE KEN USTON THE WORLD'S WINNINGEST BLACKJACK PLAYER.

Ken Uston, familiar to millions as the blackjack expert featured on CBS's "60 Minutes," has won a reputation as the world's foremost blackjack player. Now Intelligent Statements brings Ken Uston's casino-proven blackjack system to your home computer.

PLAYS LIKE THE REAL THING

Ken Uston's Professional Blackjack™ is the most complete and realistic blackjack game you can buy. You'll meet the same playing opportunities that you'd face at a real blackjack table — at your choice of over 70 Nevada and Atlantic City casinos, each with its own set of rules and variations. Or you can create your own casino, manipulating sixteen different game parameters to produce 39,813,120 different playing environments. You can select the number of decks in the shoe, vary the dealing speed, choose and name competing players, set their wallet sizes and much more. And all your data is accurately displayed, so you can play the strategy you like and get the feedback you need **to win**.

WINS LIKE THE REAL THING

Ken Uston's Professional Blackjack is the most thorough and authoritative teaching system you can buy. Now you can learn all of Ken Uston's computer-optimized card-counting strategies, from basic to advanced levels. Menu-driven interactive practice drills — augmented by superb documentation —

lead you through each skill level. At any point you can choose to see accurate running counts, continuous statistical evaluations, discard deck totals and instructional prompts, complete with sound effects. So you develop and refine the skills you need **to win big**.

DON'T LOSE OUT. START WINNING NOW.

Start your way toward winning blackjack for just \$89.95.

VISIT YOUR DEALER TODAY

And take advantage of a coupon that entitles you to a free copy of **Million Dollar Blackjack**, Ken Uston's authoritative text on the game of blackjack—an \$18.95 value!

If Ken Uston's Professional Blackjack is not available from your dealer, call (919) 933-1990 or 1-800-334-5470.

IBM PC* requirements:
48K RAM, disk drive, PC DOS*, 80-character display.
Color and monochrome versions supplied with each package.

APPLE II requirements:**
DOS 3.3, 48K RAM, disk drive, 40-character display.

Osborne 1™ requirements:
Standard Osborne 1 package.

Display shows actual photograph of IBM PC version. Apple color graphics and Osborne monochrome graphics are similar.

Versions for Atari,** TRS-80** and other brands will be available shortly.



intelligent statements™

GROWN-UP GAMEWARE™

©copyright 1982 by Intelligent Statements, Inc. All rights reserved.

*IBM PC and PC DOS are trademarks of IBM. **Apple, Osborne, Atari and TRS-80 are trademarks of Apple Computer Inc., Osborne Computer Corp., Atari, Inc., and Tandy Corp., respectively.

view didn't miss much, there are a few points we'd like to clarify.

First, the file size in *Zardax* is not limited to 13,500 characters. This is the limit only for 48K machines without an eighty-column card. With both eighty columns and a 16K RAM card the maximum is more than 30,000 characters per file. In addition to the eighty-column cards that were mentioned, we work with the Vantec 80, STB-80, Viewmax-80, Magnum-80, and others not yet available in the American market. *Zardax* is also available for the Franklin Ace 1000. We are at work on support for RAM cards and other disk drives.

Printer formatting normally is done through embedded standard controls. At last count there were something like nineteen different protocols supported. We wish the printer manufacturers would standardize! In any case, subscripting and superscripting are not limited to letter-quality printers. The newer dot-matrix machines such as the type three Epsoms do it nicely.

Finally, the Fastalk column notes each month that our "considerable extras" include "communication by modem." Our telecommunications package, *Zip-Comm*, is new. It works in forty or eighty columns, at up to 1200 baud, and from within *Zardax*. It is, however, an option and is priced at \$80.

Thanks again, and congratulations on the new post office—resistant binding.

David A. Lingwood, Action-Research
Northwest, Seattle, WA

Ian Phillips, Computer Solutions,
Brisbane, Australia

Ribbit, Ribbit, Ribbit

I fully agree with your reviewers regarding *Froger*. Sierra On-Line does not deserve good reviews just because of its being Sierra On-Line, regardless of whether the company has the rights to the "official" version.

As for reviews in general, I would like to see a zero to four star rating system. For instance, four stars would go to a startling advance in the state of the art, three if it's just a cute idea, two would mean only buy it as a gift, and with one star you'll know it might as well be a blank disk. Even better would be a simple statement of whether the package is worth the money. You can cite good and bad points all day, but there should be a final, absolute judgment. I have read *Softalk* since the beginning and have been able to count the negative reviews on one hand. Aren't there any die-hard cynics on your staff, people who would find fault in all but four or five games per year?

What about a simple list of the new products for the month? Fastalk is a so-so idea, but when does *Wizardry* get a bullet? Graphically Speaking is an excellent column. Most, if not all, series on graphics have ended like this: Apple II graphics—part 120 of 120: shape tables!

All I have to say about Penguin's new non-protection policy is that, at \$59.95, software had better be copyable and modifiable.

One more thing: how about putting a couple of blank lines between software re-

views—it would make them a lot less confusing to read.

D. Ladd, Lisle, IL

Reasoning through Beliefs

Fundamentalists will grab any pretext to put forth their fervently held beliefs. Howard Balsam's letter in November '82 Open Discussion gives cursory applause to David Hunter's farm article and then launches into an attack on evolutionary science. Because of the half-truths and misleading content I am prompted to reply.

Mr. Balsam states, "It is truly impossible to scientifically prove or disprove any particular concept of origins." Then he goes on to imply that the scientific method requires an observer

to make evolution valid.

The scientific method requires tests, not necessarily observers. When was the last time anyone saw a subatomic particle? We make testable inferences to tell us the particle is there. In a like manner, fully testable predictions and retrodictions are abundant in all the historical sciences. To see the evidence all one has to do is put aside prejudices and look at amino acids, animal breeding, fossil records, resistant bacterial strains, or similar examples from other related fields.

Mr. Balsam also misused the often misquoted second law of thermodynamics to explain that life cannot become more complex. This would leave one with the annoying prob-

ASSEMBLER/TEACHER

This program makes your APPLE* teach you assembler! We assume you know BASIC already, and now you'd like to learn APPLE* assembler. You need three things (two heavies and a friend)...

1. The APPLE II Reference Manual (heavy),
2. A good 6502 assembler manual (another heavy: ask for both at your APPLE* dealer), and
3. ASSEMBLER TEACHER, a friendly program that takes you right through the learning barrier!

ASSEMBLER TEACHER will soon have you eating those manuals for breakfast. And you'll never outgrow ASSEMBLER TEACHER, since it has tools an expert can use even more than a novice. Here's how ASSEMBLER TEACHER works:

- ASSEMBLER TEACHER prowls your APPLE*'s memory page by page, drawing a map of what it finds.
- ASSEMBLER TEACHER shows your CPU running in slow motion on your screen, so you can see exactly what the operations are doing to the registers and the stack (a great debugging tool).
- ASSEMBLER TEACHER exposes the mysteries of hexadecimal, two's complement, character and other data representations, instantly translating from any version to all others.
- ASSEMBLER TEACHER gives you the concepts you need to cope with assembler, using simple on-line lessons that grab you by the keyboard and make you play your way to knowledge.
- ASSEMBLER TEACHER is written by John Fairfield, a Ph.D. in Computer Science who regularly teaches assembler. A RAM Mini-Assembler is included.

"Rating: A . . . a great help to anyone interested in learning machine language programming . . . and the price is right."
Peelings II (Jan. '82)

Ask for
ASSEMBLER TEACHER
at your dealer, or order from:

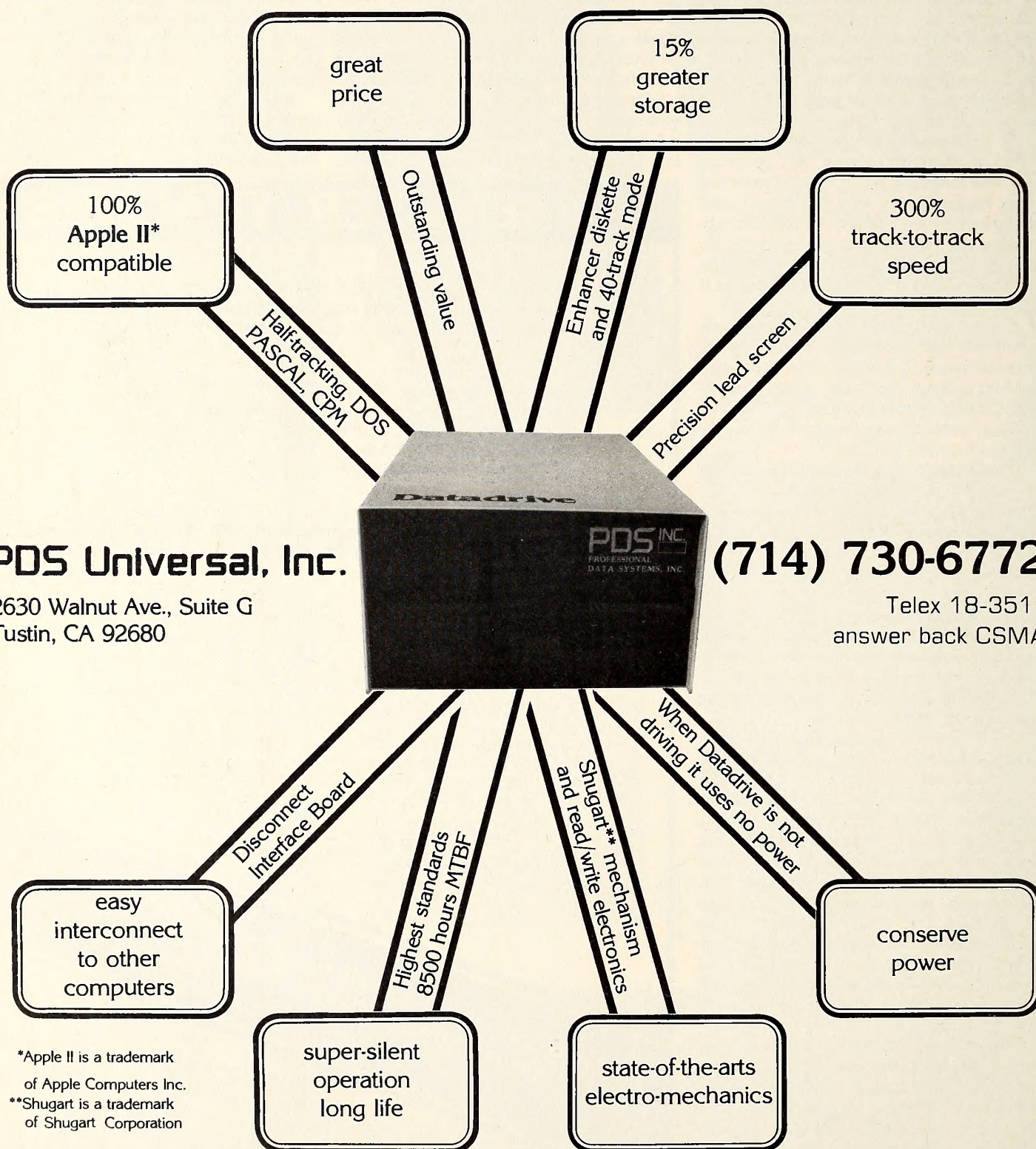
ASSEMBLER TEACHER
Computer Works, Inc.

P.O. Box 1111, Harrisonburg, VA 22801
(703) 434-1120

*Registered trademark of
Apple Computer, Inc.

\$44.95 MC/VISA DOS 3.3

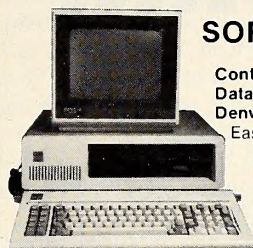
All Logical Paths Lead to
PDS DATADrive™ FOR YOUR APPLE II*



*Apple II is a trademark of Apple Computers Inc.
**Shugart is a trademark of Shugart Corporation

IBM, APPLE and ATARI USERS

CompuShack announces



SOFTWARE FOR YOUR IBM PC

Continental - The Home Accountant	CALL
Datamost - Write On / Word Processor	"
Denver Software -	"
Easy Effective Accounting System	"
ISM	"
Mathmagic	"
Graphmagic	"
Infocom	"
Zork I	"
Zork II	"
Deadline	"
Information Unlimited	"
Easy Filer	"
Easy Planner	"
Easy Speller	"
Easy Writer II	"
Micro Lab - Tax Manager	"
Micro Pro	"
Wordstar	"
Mailmerge	"
Peechtree	"
General Ledger	"
Accounts Receivable	"
Accounts Payable	"
Sir Tech - Galactic Attack	"
VisiCorp	"
256K Visicalc	"
Visitrend/Visiplot	"
Visidex	"
Visifiles	"

CONTINENTAL SOFTWARE

First Class Mail	CALL
CPA I General Ledger	"
CPA II Accounts Receivable	"
CPA III Accounts Payable	"
CPA IV Payroll	"
CPA V Property Management	"
The Home Accountant	"
The Home Accountant Plus	"
DAKIN 5 CORPORATION	"
Depreciation Planner	"
Budget Planner	"
Business Bookkeeping System	"

HAYDEN

Applesoft Compiler

IMS

Graph Magic

Math Magic

LIGHTNING SOFTWARE

Master Type (Hi-Res)

MICRO PRO

Word Star Customization Notes

Wordstar

Super Sort

Mail Merge

Data Star

Spell Star

Calc Star

Word Star Training Guide

Word Star Update

MICROSOFT

Time Manager

Fortran

A.L.D.S.

Basic Compiler

muMath/muSimp

COBOL

M/SORT

TASC

Multiplan (Native Apple)

Multiplan

SOFTWARE FOR YOUR ATARI 400/800 PERSONAL COMPUTER

Asteroids	CALL
Centipede	"
Pac-Man	"
Blackjack	"
Caverns of Mars	"
APEX CASSETTES	"
Avalanche	"
Outlaw/Howitzer	"
747 Landing Simulator	"
Eastern Front	"
Dog Daze	"
Reversi II	"
Blockbuster	"
7-Card Stud	"
Downhill	"
Video Math Flash Cards	"
Letterman	"
Wordmaker	"
Cubbyholes	"
DISKETTES	"
Data Management System	"
Family Cash Flow	"
Family Budget	"
Advanced Music System	"
Eastern Front	"
Supersort	"
Insomnia	"

SOFTWARE FOR YOUR APPLE II + ART-SCI INC.

Magic Window	CALL
Magic Mailer	"
Magic Words	"
Magic Pak — Includes All Three	"
Magic Window II	"
ASHTON-TATE	"
Dbase II (Apple)	"
Dbase II (Apple 48K)	"

We Are The Systems Specialist

SOFTWARE FOR YOUR APPLE II +

ON-LINE SYSTEMS

Screen Writer II	CALL
The General Manager	"
The Dictionary	"
Speed-ASM	"
Expediter II	"
Memory Management II	"
Lisa 2.5	"
Lisa Educational System	"
PEECHTREE SOFTWARE	"
General Ledger	"
Accounts Receivable	"
Accounts Payable	"
Inventory	"
Payroll	"
Peachcalc Electronic	"
Spreadsheet	"
Telecommunications	"
Spelling Proof Reader	"
Mailing List Manager	"
Peachtext	"
SENSIBLE SOFTWARE	"
Back It Up	"
Disk Recovery	"
Disk Organizer II	"
Multidisk Catalog	"
Super Disk Copy	"
Sensible Speller	"
Sensible Speller Supertext	"
Format	"

SOFTWARE PUBLISHING COMPANY

Personal Filing System	CALL
Personal Report System	"
Graph	"
SORCIM CORPORATION	"
Supercalc	"
STONEWARE	"
Stat Pac	"
D B Master	"
D B Utility Pack	"
D B Utility Pack II	"
Graphic Processing	"
System Standard	"
Graphic Processing	"
System Professional	"
SYSTEMS PLUS	"
General Ledger	"
GL/AR/AP	"
GL/AP/AR/Inventory	"
VISI CORP	"
Visifiles	"
Desktop Plan	"
Visiplot	"
Visidex	"
Visicalc 3.3	"
Visischedule	"
Business Forecasting	"
Model	"
Visilink	"

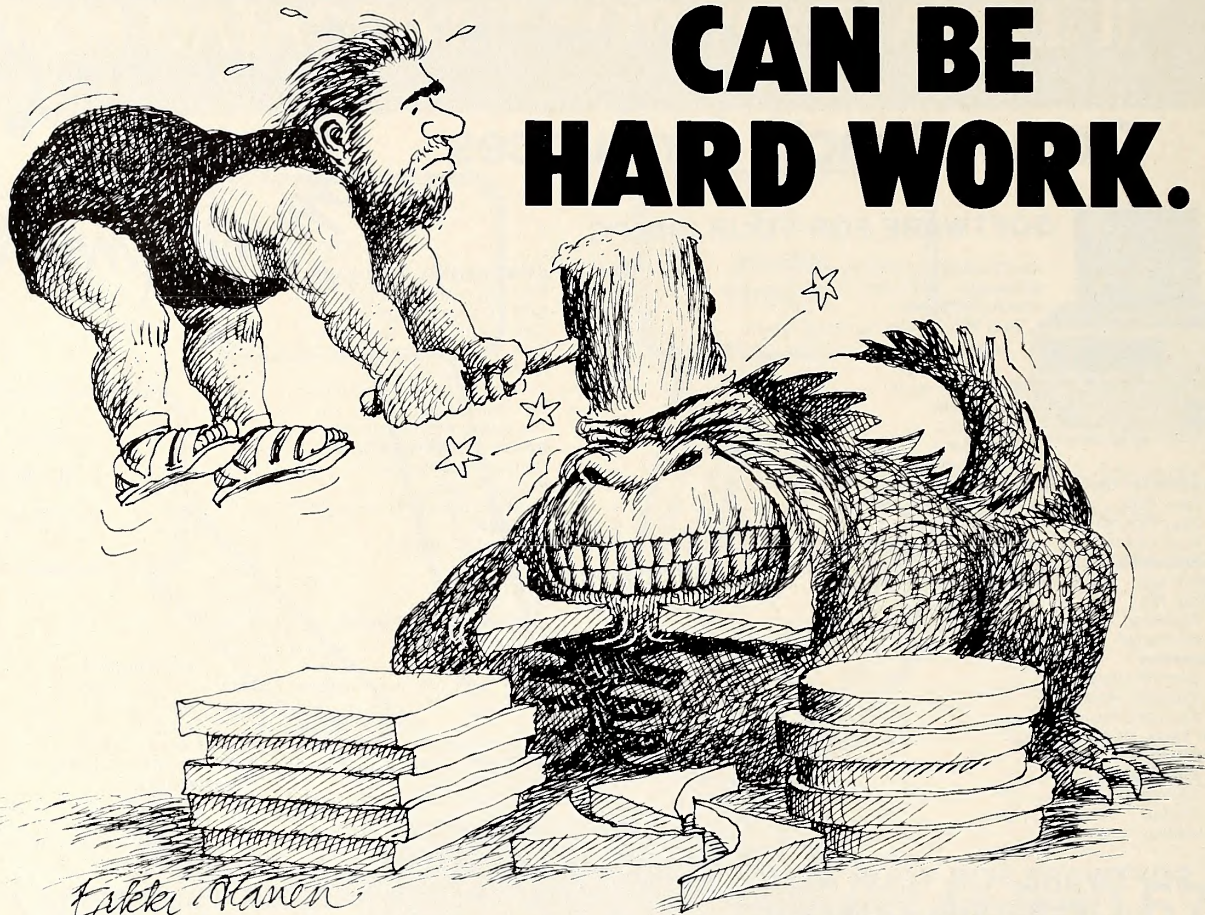
COMPUShack

Business Home Computers

2630-H Walnut Avenue, Tustin, CA 92680

(714) 730-7207 Telex 18-3511 Ans Bck ESMA

UPDATING YOUR FILES CAN BE HARD WORK.



We all know it's got to be done. A new address for a company you deal with means changing the records right away. A client gets married and changes her name. Another change that has to be made in the records. If you're faced with several filing cabinets filled with folders, making simple changes becomes a complicated, time consuming job. And if your mailing list is generated from those records, or if you rely on them for billing information, you'd *better* make those changes quick.

Relax, DB MASTER makes updating records quick and easy. All you've got to do is call up the name of the company or client on the view screen. It takes about three seconds. When the record appears, make the appropriate changes right then. It's over and done with. Immediately. No retyping of an entire record. No anxiety. And as soon as you've made the change, say, from "Colleen Patterson" to "Colleen Smith," DB MASTER refiles it under the new name in the proper sequence. It's all over in less time than it takes you to walk over to the filing cabinet.

And it's easy to correct, change or edit any *part* of a record. Imagine the time savings when you're constantly updating inventory or job records.

We designed DB MASTER to make your life easier. Sure, there are other data base systems for your Apple II. But if you're not using DB MASTER you're simply

WITH DB MASTERTM IT'S EASY.

not getting all you could from your data base manager.

Want more capability? DB MASTER provides it with the expanded-capacity Special Edition for Hard Disk to

complement the popular floppy diskette version. And there are three powerful accessory programs. UTILITY PAK #1, for example, allows you to access other standard Apple files (including VisiCalc), and even change the way you've structured your files. UTILITY PAK #2 allows you to edit or change up to five "fields" in a single pass through your files. And STAT PAK performs statistical analyses on data in your DB MASTER files. Of course, there's considerably more capability in each of our accessory paks than we have room to talk about here. Ask your dealer for the full details.

Stoneware backs up DB MASTER with a support staff second to none. Just give us a call. We can help solve your problems. After all, that's what Stoneware and DB MASTER are all about.



© 1982 Stoneware Incorporated.

TELEX II: 910-384-2016 STONEWARE SRFL

DB MASTER is a registered trademark of DB MASTER Associates. Apple II Plus is a registered trademark of Apple Computer. VisiCalc is a registered trademark of VisiCorp.

lem of explaining how a single cell can become a multibillion-celled human being in nine months. It also conveniently forgets that this law deals with a closed system, and that Ilya Prigogine was given the Nobel Prize in chemistry for showing that the influx of solar energy places living matter in a temporarily open system.

Everyone is entitled to their personal beliefs. Science, however, must deal with the acquisition and analysis of data and the synthesis of that data into the most logical theory currently possible. It serves no purpose but to confuse the reader when half-truths and misinformation are used to support personal beliefs at the expense of science.

Richard P. Gensmer, Littleton, CO

Let's Talk Turtle

In November '82 *Softalk* the Young Peoples' Logo Association was mentioned in "The Voice of the Turtle" tutorial by Donna Bearden. Do you know how to get in contact with this group? Thanks for your help.

Judy Olson, Edmond, OK

The address of the Young Peoples' Logo Association is 1208 Hillsdale Drive, Richardson, TX 75081; the phone number is (214) 783-7548.

Selective Trash Picking

This is in response to the letters in Open Discussion from Lynn Leopard and Richard Norling (November '82) and Charles Wells (September '82).

Richard, save yourself a lot of trouble and get the January 1981 issue of *Call-A.P.P.L.E.* Randy Wigginton presents an assembly language routine that does exactly what you want.

Lynn should refer to my articles "Garbagemen Strike" and "Weed Out the Trash" in the August and November 1982 issues of *Call-A.P.P.L.E.* I describe an Applesoft programming technique called selective string preservation. Proper use of this technique will eliminate the need for garbage collection altogether. Lynn's database sounds like a perfect place to apply it. Random-access database programs are very easy to backfit with selective string preservation. Every time a record is written out to the disk, you reset the string space pointers to where they were before any of that data was entered. In that way, the next record you enter goes into RAM in the same space as the one before, so you never run out of room. You throw away the old data as soon as it becomes garbage instead of letting it build up to become a monumental task.

File Cabinet is another story. Since it uses sequential files the entire database must be maintained in RAM. This makes selective string preservation very difficult, if not impossible. I have experienced garbage hangups with *File Cabinet* but have not yet done anything about it. As Charles Wells said, garbage collection is the price paid for variable-length strings. But it doesn't have to be so painful! Perhaps the fast garbage collection routine would be the best compromise for *File Cabinet*.

Clay Ruth, Dyer, IN

Words of Wisdom

Wizardry experts, help! Where is the entrance to level ten? Where are the stairs going back to level eight? I haven't found them yet; I get to level nine from the buttons. Is there an outer limit to level three? What good are the keys? Is the frog statue of any use? What are the requirements for a ninja? What good is a jeweled amulet?

In *Knight of Diamonds* my current party is just now beginning to make level twelve of experience. I have mapped most of level one. The dark area is one unknown area. I cannot map very far without getting killed. Can anyone give me some information on this area? Is it a requirement to be level thirteen before advancing

ing to level two? Does the shade of Gnilda have anything to do with the level one riddle?

Matt Lentz, Blue Earth, MN

You haven't covered every square of level nine, have you? You can't miss that entrance if you map the whole thing by being there. There are no stairs to level eight from level nine. Whatsamatta, you don't like elevators? Is there an outer limit to level three? Why, yes. The keys and the frog—try going without them. Ninjas are evil and very strong. What good is a jeweled amulet? What good is hitting a home run?

The dark area of level one of Knight of Diamonds is very dark. You need to map it. Go back to Wizardry and grow stronger. You should be

≡ BULK MAILERTM

A professional mailing list program.

BULK MAILER is a Specialized Data Base program that is straight-forward, easy-to-use and perfect for anyone who maintains or is a serious user of mailing lists. Unlike general D.B. programs, BULK MAILER is designed specifically for large mailing use and includes an advanced sorting capability, a sophisticated duplication search, 4 digit key (code), an incredible 32,000 name capacity plus many direct marketing features.

2400 NAMES (dual drive) or **1200 NAMES** (single drive) Apple II/Disk II \$125.

The diskette version of BULK MAILER contains many features not found in other mailing list or Data Base programs including:

- Duplication Elimination
- Written by Direct Marketing Specialists
- Broad coding capability
- Can upgrade to Corvus Hard Disk
- Zip and Alpha sorts
- 1-up, 2-up, 3-up, 4-up labels
- Default options
- Remarks line
- Plus other marketing features

32,000 NAMES (Apple II/Corvus Hard Disk Drive Version) \$250.

Described as a "software breakthrough", this version contains all the features above plus:

- Nearly instantaneous 32,000 name sort
- Finds and eliminates duplications
- Easy and precise parameter control
- Sophisticated record replacement procedure
- Built-in customized DOS
- Perfect for serious mailers
- Fully tested and used by many

Designed for
Direct Marketing

A Software
Breakthrough

At your dealer or order directly from:

Also available — IBM Version

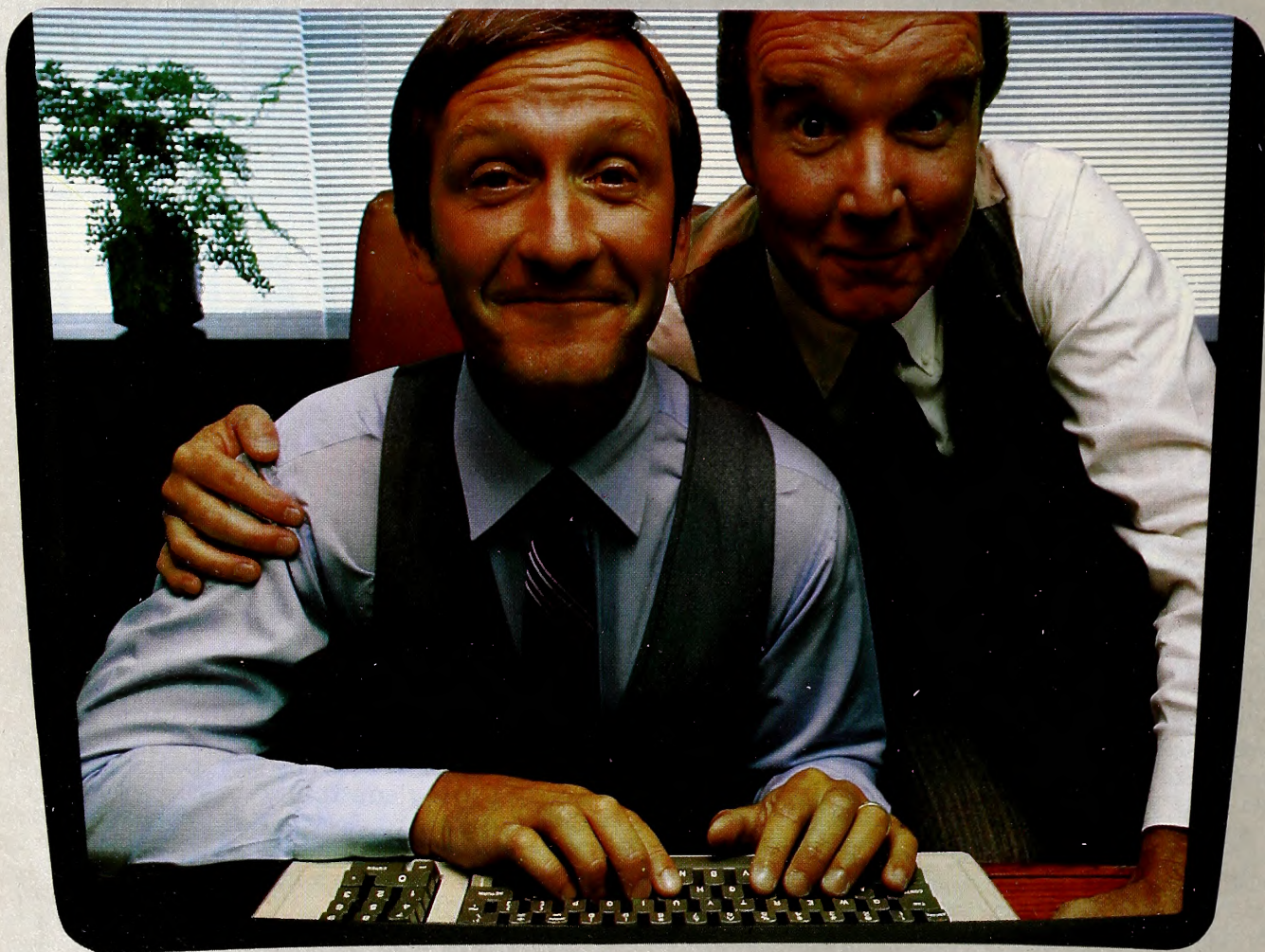


SATORI
SOFTWARE

5507 Woodlawn Ave. N
Seattle, WA 98103
206 633-1469

Apple II and Disk II are trade marks of Apple Computer Inc.

Corvus is a trade mark of Corvus Systems, Inc.



“NOW WE HAVE IT!”

Introducing better company planning, company-wide, with VisiCalc Advanced Version.

More than 300,000 business professionals have discovered how much help our VisiCalc® program can be in planning, budgeting and forecasting. Now we can help businesses even more.

VisiCalc Advanced Version does it all

VisiCalc Advanced Version makes it easy to extend the problem-solving power, speed and accuracy of the "electronic worksheet" throughout an organization.

With this program, you'll be able to leverage the knowledge of your most knowledgeable people. Make more productive use of more of your staff. And do a better, faster, smarter job.



"I create a complex, yet easy-to-use worksheet..."

The best way to do what every company wants to do better

With VisiCalc Advanced Version, the people and departments in your firm will be able to quickly develop their plans, in a uniform format, for easier consolidation into your overall plan.

And everyone involved in your planning process will be able to make their most productive contribution to the effort.

Sophisticated planning made easy for everyone

Using VisiCalc Advanced Version, knowledgeable individuals within your company can create powerful, preformatted worksheets, or "templates," for nearly anything numerical.

For example, the knowl-



"Then, doing our department's budget is as easy as filling in the blanks!"



"The program makes it practically impossible to make mistakes!"



"I ask 'What if?' by changing any number... the new results are instantly calculated."

edge of a corporate financial officer can be applied to create templates for complete and

consistent financial reporting. Then others in your company without extensive financial or computer expertise can easily use these templates to provide the desired information in a uniform manner.

It's so easy. They simply "fill in the blanks" on the worksheet. In seconds, the program performs all the complex calculations built into the worksheet, and displays the answers to problems that could have taken hours to solve by hand.

Everyone can consider "What if...?"

The speed and versatility of VisiCalc Advanced Version make it easy to explore alternatives. Both template build-



"With just a few keystrokes I consolidate the worksheets..."

protect all these parts of a worksheet. It can shield confidential data a user need not see and also guide a user step-by-step through a worksheet.

You can also insure that a user can't enter a label when a number is called for — and vice versa.

And if users ever need additional guidance in completing their worksheets, VisiCalc Advanced Version provides comprehensive on-screen help, at a touch of the "?" key.

Multi-sheet consolidation and finished reports, too

VisiCalc Advanced Version makes it easier to consolidate worksheet totals from various



"And produce presentation-quality reports for my boss."

ers and worksheet users can change any number in a problem and instantly see the new results. Everyone will be able to analyze the impact of decisions before they make them.

Mistakes locked out, help built in

With VisiCalc Advanced Version there's no worry about someone accidentally altering formulas, titles or any other important information. The program can

groups, departments or divisions into concise, presentation-quality reports.

See for yourself

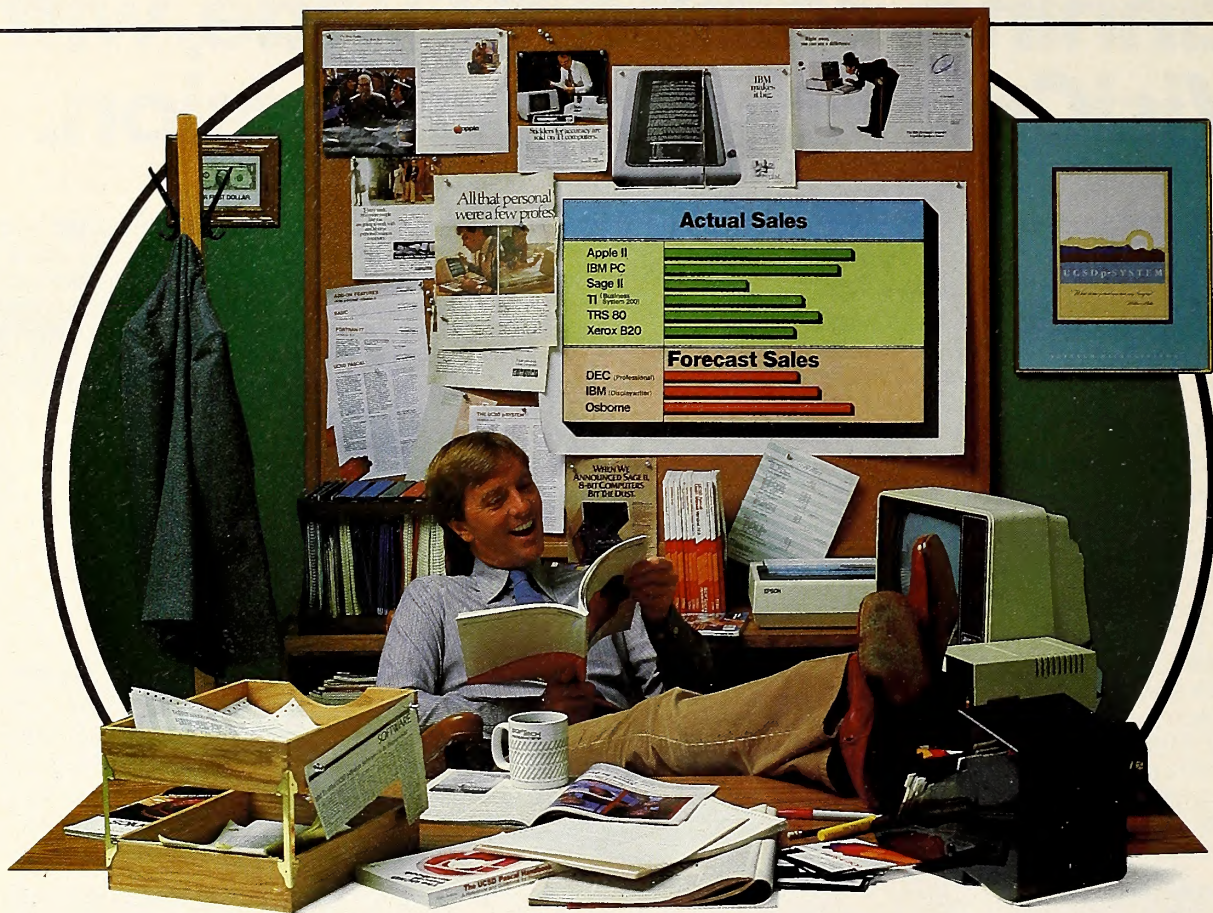
Visit your nearest computer store for a demonstration of VisiCalc Advanced Version. Or write us at 2895 Zanker Road, San Jose, CA 95134 for a copy of our brochure.

Discover how easy it is to use electronic worksheets in your company for problem-solving, company-wide.



VISICORP™
PERSONAL SOFTWARE™

SOFTech MICROSYSTEMS



The Universal Operating System.* Finally, once and for all.

The UCSD p-System* from SofTech Microsystems isn't like any other operating system you've ever used. Why?

Because the p-System is the *only* truly portable, universal operating system ever developed, that's why. It's equally at home with all popular personal computers. Such as an IBM PC or Displaywriter, an Apple, a DEC, an HP, an Osborne, a Philips, a Sage, a Tandy, a TI, you name it. It lets you develop applications that are portable to 8-bit as well as 16-bit micros.

And we don't mean portable just at the source code level, either.

We mean you can develop your program on virtually any micro, compile to object code, and it's totally trans-
portable. So you can design programs once, and you've designed for the entire market.

The p-System then actually broadens your potential customer base. With no significant reinvestment in programming time. You can reuse program components

from one application to another, and even create your own library of utilities. What's more, the p-System's universality allows you to get your software up and running on new hardware as soon as it hits the market.

It's about time.

At SofTech Microsystems, we saw an industry-wide need for an efficient OS that could honestly call itself universal. So, in 1979, we delivered just that. The UCSD p-System. And we've been delivering ever since.

As an applications developer, we think you owe yourself an OS that lets you broaden your market base and develop higher quality applications faster, less expensively, more dependably and more efficiently than ever before.

All at the same time. All on one micro.

Thanks to the p-System, finally, once is enough.

Finally, Once is Enough.

For product information or information on how to get a copy of the p-System Application Catalog, call or write to us at SofTech Microsystems.

The p-System for the Apple II can be purchased at all major retail outlets.

OEM and dealer inquiries for the Apple II should be addressed to SOFTSEL, Inc., 8295 South LaCienega Blvd., Inglewood, CA 90301.

SofTech Microsystems • 16885 West Bernardo Drive • San Diego, CA 92127 • (619) 451-1230

*Universal Operating System is a trademark of SofTech Microsystems Inc., UCSD p-System is a trademark of the Regents of the University of California

level thirteen minimum to go into Knight of Diamonds at all. And the shade of Gnida? No.

How To Get Stuffed

I've got a couple of questions. First, does anyone know a way to load DOS into a language card? Second, how do the software companies get their products in *Softalk's* Christmas gift guide?

Chris Riley, Pompano Beach, FL

With one exception, any company that produces or publishes Apple-oriented products may contribute at no charge to the holiday gift guide. Companies are asked to write their own product descriptions according to a format Softalk provides. The one excepted category is discount sales.

That Program Was Dipsy

Since I have the Epson 80 with Grafrax I decided to try the program from the "Hi-Res Dumpster" letter that was in the December Open Discussion. After loading into memory the hi-res picture and then running the program, I discovered the printer would stop after about thirty-four lines. In reviewing the program I noticed that line 230, which makes sure that the high bit is clear, needed to be changed:

```
230 IF C1 > 127 THEN C1=C1-128:REM
    RID HIGH BIT
```

Also, I would like to recommend *The Other Epson Manual* for the Apple II and the MX-80 with Grafrax 80 from Cut the Bull Software of San Diego, California.

Jerry White, Pittsburg, CA

You Are What You Count

I have written a program *Softalk* readers might be interested in. It was inspired by the hi-res turkey contest in the November issue. We started out like probably hundreds of others diligently counting turkeys. We remembered all the rules—only count the hi-res turkeys, not those in pictures. After five minutes or so of this tedious task a vision came to us. We knew right then what our mission in life was to be (at least for the evening). We were to help free people everywhere from ever counting another turkey. We were to write a hi-res turkey counter!

With this quest in mind, we drew a turkey to help people identify what turkeys really look like. Once our turkey had taken shape we could see clearly how the program was to be written. To make a short story even shorter, we have completed our mission. The hi-res turkey counter is a reality and we are entrusting it to *Softalk's* care. Pass it on to Appledom and make this world a better place to live. (By the way, we got too interested in the turkey counter program and never did go back to totaling the turkeys up.)

```
10 REM TURKEY COUNTER PROGRAM
20 REM BY VALERIE A. FLOETER
30 REM THE SOFTWARE EXPERIENCE
40 REM NOVEMBER 1982
50 REM INSPIRED BY THE TURKEY
```

```
51 REM CONTEST
60 REM SOFTALK, 1982
65 POKE 232,252: POKE 233,96
70 PRINT CHR$(4)"BLOOD TURKEY"
80 GOSUB 1000: REM OPENING SCREEN
90 GOSUB 2000: REM DISPLAY TURKEY
100 GOSUB 3000: REM COUNT TURKEYS
    FOUND
110 GOSUB 4000: REM ENDING SCREEN
120 END
1000 HOME: VTAB 10: HTAB 10
1010 PRINT "HI-RES TURKEY
    COUNTER": PRINT
1020 HTAB 10: PRINT "INSPIRED BY
    SOFTALK": PRINT: PRINT
1030 HTAB 6: PRINT "WRITTEN BY
    VALERIE A. FLOETER"
1040 HTAB 13: PRINT "NOVEMBER 1982"

1050 PRINT: HTAB 9: PRINT "HIT A KEY
    TO CONTINUE.": GET AS: PRINT AS
1060 :
1070 HOME: HGR: HCOLOR= 7:
    SCALE= 1: ROT= 1
1080 FOR I = 1 TO 20
1090 X = INT (300 * RND (5)): IF X < 20 OR
    X > 260 THEN 1090
1100 Y = INT (200 * RND (6)): IF Y < 20
    OR Y > 180 THEN 1100
1110 DRAW 1 AT X,Y
1120 NEXT I
1130 :
1135 VTAB 21
1140 PRINT: HTAB 13: PRINT "A TURKEY
    PATCH": FOR I = 1 TO 2000: NEXT I
1150 TEXT: HOME: VTAB 10
1160 PRINT "THIS PROGRAM IS
```

TAX BREAK

Turns Your Apple® Into A Tax Consultant

PROFORMA SOFTWARE'S TAX BREAK '82 puts an end to your anxiety, confusion and apprehension associated with researching the new tax laws and preparing your 1982 personal income tax return. Written by an IRS Enrolled Agent with over 24 years of experience, **TAX BREAK '82** is easy to use and quickly helps you to determine your lowest tax.

TAX BREAK '82 automatically examines the full spectrum of loopholes, benefits, deductions, all special income averages and limitations. It evaluates over 120 possible reporting options, searches for and finds the best tax path. **TAX BREAK '82** then displays or prints an optimum tax return and provides you with a return analysis showing the minimum tax due and how your return compares with a typical taxpayer in your income range.

NEW FOR '82...TAX BREAK PLANNER!

Containing all the features of **TAX BREAK '82**, **PROFORMA SOFTWARE's** new **TAX BREAK PLANNER** takes you beyond this year's tax return and into a new dimension of multi-year "TAX PLANNING". Now you can easily model an investment program, and evaluate its impact on your current and future tax status. You can play "what if" simulations with real estate, stocks and bonds, annuities, interest rates, etc...and measure their impact on your



potential tax liability. You can also get a printed copy of the optimized tax returns.

TAX BREAK '82 and **TAX BREAK PLANNER** turns your **APPLE** Computer into your personal tax consultant. Available at a tax deductible price of:

TAX BREAK (ANNUAL)..... \$129.95
+ \$2.00 shipping and handling & applicable sales tax.

TAX BREAK PLANNER (MULTI-YEAR)...\$179.95
+ \$2.00 shipping and handling & applicable sales tax.

Examine **TAX BREAK '82** and **TAX BREAK PLANNER** at your local dealer today.

TAX BREAK '82 was previously distributed by DATAMOST under the name "TAX BEATER".
PROFORMA SOFTWARE will provide **TAX BEATER** 1981 purchasers with a new **TAX BREAK '82** update for only \$49.95 or upgrade to **TAX BREAK PLANNER** for only \$99.95.



PROFORMA SOFTWARE
2706 HARBOR BLVD.-SUITE 200
COSTA MESA, CALIFORNIA 92626
(714) 641-3846

DESIGNED TO HELP READERS COUNT TURKEYS. IT SHOWS YOU HOW TO IDENTIFY A TURKEY AND THEN HELPS YOU MATCH TURKEYS FOUND IN THE NOVEMBER"

```
1170 PRINT "SOFTALK ISSUE. AS YOU
FIND TURKEYS, IT KEEPS TRACK
OF THE NUMBER YOU HAVE
LOCATED."
1180 PRINT : PRINT "GOOD LUCK ON
YOUR WILD TURKEY SAFARI."
1190 PRINT : PRINT "HIT A KEY TO
CONTINUE.": GET A$: PRINT A$
1200 RETURN
2000 HGR : SCALE = 2: DRAW 1 AT 120,70
2005 PRINT : PRINT : PRINT : PRINT
2010 PRINT " THIS IS AN ENLARGED
VIEW OF A TURKEY.": FOR P = 1 TO
2000: NEXT P
2020 RETURN
3000 VTAB 21: PRINT "TURKEY
COUNT: ";TC
3010 PRINT
3020 PRINT "DOES YOUR OBJECT LOOK
LIKE THIS? ": PRINT " (N=NO,
Y=YES, S=STOP)";
3030 HTAB 38: VTAB 24: GET A$: PRINT
A$;
3035 VTAB 21: HTAB 1
3040 IF A$ = "Y" THEN TC = TC + 1:
GOTO 3000
3050 IF A$ = "N" THEN 3000
3060 IF A$ <> "S" THEN 3030
3070 RETURN
4000 TEXT : HOME
4010 VTAB 10: PRINT "YOU FOUND A
TOTAL OF ";TC;" TURKEYS."
```

```
4020 PRINT : PRINT "HOPE YOU FOUND
THEM ALL."
4030 RETURN
```

Call-151

```
60FC: 01 00 04 00
6100: 41 C0 39 3F 38 3F 17 BF
6108: 17 17 36 36 15 15 BD 2A
6110: AD 36 AE 15 AE 2E 15 15
6118: 45 15 45 28 15 C7 3B 3F
6120: 30 27 38 20 C5 29 20 C5
6128: 29 2D 28 28 20 C5 21 C5
6130: 21 2C 20 24 24 24 C7 21
6138: 24 2C 28 2C A8 3C 38 38
6140: 38 38 BF 17 36 AE 36 36
6148: 17 17 C7 39 C7 39 BF 3F
6150: 17 C7 39 38 C7 39 C7 39
6158: 17 17 AE 15 AD 2D D7 9A
6160: 3F C7 39 38 30 BE 36 36
6168: 15 36 15 AE 2E 2D 28 C7
6170: 38 38 C7 29 08 38 C7 39
6178: A8 51 8A 51 2D 08 B5 AD
6180: 2E C5 29 C5 39 18 17 C7
6188: B9 93 AD 11 15 36 D7 45
6190: 08 08 28 1F 2F 48 49 D7
6198: 9A D3 9A D3 92 C7 18 18
61A0: C0 40 C0 40 C0 40 38 C7
61A8: 39 18 18 18 18 C0 08
61B0: C5 21 45 08 08 08 48 49
61B8: 49 49 49 49 21 C5 A9 C5
61C0: 39 C7 08 00 FF FF 00 00
```

BSAVE TURKEY, A\$60FC, L\$C7

Now, after typing control-C, all you've got to do is run the program!
Valerie A. Floeter, Milwaukee, WI

Snugly Debugged

Paul Raymer's problem (December '82 Open Discussion) of missing material because of the goto statements in *Softalk* is shared by many readers I'm sure. His solution of using "Gosub page such and such" and "Return to page such and such" statements instead simply will not work, though! When returning to a page, one would eventually read on and get to the return statement again, thereby generating a "return without gosub" error.

To avoid this problem, I suggest structured reading. Namely, have a simple stack where, before saying "Goto page such and such" you say "Push this page number." Then, when you finish reading an article, you say "Pop a page number." If the stack is empty, read on. If not, run "Goto page so and so" as you do now (but using the number you got off the stack). This concept will solve these reading problems quite nicely without further complications.

By the way, I think *Softalk* is excellent reading. It's the best there is for the Apple. I don't know why anyone should complain about too much advertising. I usually read the advertisements first and the articles later in the month. Why don't you come out with a book compiling different articles into one volume. It would make excellent reference material. Keep up the good job; you deserve all the credit you get—and then some!
Anthony J. Scriffignano, North Caldwell, NJ

SOFT DISK Magazette

FREE SOFTWARE

Order *Softdisk* before March 31, 1983, and receive a free bonus disk full of utilities and a recipe filing system.

Plunge into a new software experience and be pleasantly surprised.

Softdisk is published monthly on disk and it's chock full of Apple news, hints, and tips, plus a grab bag of unprotected programs ready to run.

Softdisk will make you glad you own an Apple.

Robert Moskowitz wrote in the July 1982 issue of *Popular Computing*: "Softdisk is an automatic two-way street. As each new issue arrives in its special reusable mailer, you return last month's issue along with comments and contributions you have added to the disk."

Act now! Don't miss this opportunity to get a disk full of free software and at the same time introduce yourself to *Softdisk*, the monthly magnetic magazine for Apple owners.

Softdisk costs \$10 for the first issue, including the free disk, and \$5 per subsequent issue when the previous disk is returned.

Send order with payment to:

SOFT
DISK
Magazette

3811 Saint Vincent, Department S2
Shreveport, LA 71108

SOFTALK CLASSIFIED ADVERTISING

DATA ENCRYPTION

For the best part of \$1,000 you can get a "black box" encryption device. Consider Sphinx, which is merely 100,000,000,000,000,000 (that's quintillion) times as powerful. Minimum. No maximum. Spend another few seconds at the keyboard, and all the computers in existence could not generate your key if they ran from the Big Bang to date. Impenetrable, unbreakable, even in theory. Complete with backup disk, \$35. Replacements for worn-out or damaged disks \$5 plus postage. Requires 48K. Crane Hill, 1208 Chisholm Trail, Pensacola, FL 32514.

WE'LL GIVE YOU \$25 CASH with every \$100 software purchase. We carry over 5,000 name brand programs. We also offer similar rebates on hardware. Free catalog. SPINTRONICS, 2490 Channing Way #503, Berkeley, CA 94704; (415) 540-5645.

BETTER BUYS FROM BYKE

Interested in great, low software prices for your Apple II, IBM, or Atari? Send for your free catalogue today. Write to: BYKE SOFTWARE, Box 15311, Cincinnati, OH 45215.

BIG PROFITS TRADING stocks and stock options. Small investment with low risk. Sophisticated money management system. Write free details. Softsystems, 2005 W. Balboa Blvd., Suite 309F, Newport Beach, CA 92663.

SOFTWARE TRS APPLE ATARI

Low prices, fast delivery, large savings. Serving the U.S. with the finest in major brand software. Most products shipped from stock. If we don't have it listed... ask. We'll try to get it for you at a savings. Call or write for catalog/price. *Oasis West*, 470 Castro St., Suite 207-3359D, San Francisco, CA 94114; (415) 861-8966.

3M DISKS

Authorized 3M distributor. Buy wholesale. Don't buy generic when you can buy Scotch at the same price. Dealer inquiries welcome. Call or write for prices. Argonaut Distributing, 1104 Buchanan, Antioch, CA 94509; (415) 778-2595.

THE EASY BOARD: Serial and Parallel interface for Apple II or II+. **FEATURES:** Operates in any slot; menu-driven I/O in ROM; programs set I/O with 1 byte; input-serial/keyboard; output-screen/serial/parallel/any combination; external or Apple terminal in Full/Half duplex. Only \$99.95. Introductory price good through Apr. 83. Dealer inquiries invited. E.T. COMPUTER PRODUCTS, 6523 Briar Glade Dr., Houston, TX 77072.

SOLAR SOFTWARE

Solar programs for APPLE, IBM PC, and TRS-80 computers; TI-59 and HP-67/97/41C handheld calculators; Data Bases, Computer Services & Solar Products Directory. Programs to determine Cost Benefit Analysis, Discounted Payback, Solar Flux, Heat Loss/Gain, Energy Load, Payback Analysis. Solar Products Directory of more than 450 businesses/manufacturers offering windmills, do-it-yourself kits, solar panels (water, air, photocells), plus U.S. DOE publications. Send \$12.95 (check, money order) to ASTRAL ENTERPRISES, P.O. Box 153, Dept. ST1, Carpentersville, IL 60110.

LOW SOFTWARE PRICES!

Check out our fantastic prices. Write for our ****FREE**** price list! KERR SOFTWARE, Box 5301-ST, Long Beach, CA 90805. Or call (213) 428-8193.

SALT II—A SYNTAX ANALYZER

Is your program worth its salt? Applesoft cannot find errors until a statement is run. Let Salt spot those errors before it's too late! Not just a keyword lookup—actually runs each line of code. Finds all 15 types of syntax errors by line no. & error msg. DOS 3.3 disk + guide (\$39 postpaid). Guide only (\$3). LAST, 619 Sarver Ave., Montgomery, AL 36109.

TANK PLATOON!

Players control infantry, tanks, leaders and personnel carriers, with artillery, machine guns, anti-tank missiles, wounding, panic. This is war. 48K DOS 3.3, \$29 to Dataworks, P.O. Box 236, Deep River, CT 06417.

EXTREMELY LOW PRICES

Authorized Rana drive dealer. Extensive Apple software. We pay shipping. Write for catalog.

The Computer Workshop

7603 E. Firestone Blvd., Suite 155
Downey, CA 90241
(213) 864-5564

SOFTWARE SALES FOR THE APPLE II

RAINBOW SOFTWARE
9528 Miramar Road, Suite 26
San Diego, CA 92126

dBASE II

Anyone interested in programming, writing applications, teaching, or attending classes or user groups in dBASE write to Drawer L, c/o Softalk, Box 60, North Hollywood, CA 91603.

RISK SIMULATOR

User-friendly software uses Monte Carlo method of statistical simulation to analyze complex probability distributions. Applications include a wide range of insurance and risk management problems. Hi-res graphics. Extensive documentation. \$187.50. Phone (919) 765-5588 or (919) 722-1766. Or write:

Actuarial Microcomputer Software
3915 A Valley Court
Winston-Salem, NC 27106

NEW! DOT MUNCH

Exciting chase and capture game. 60 levels of difficulty, 14 different mazes. Full sound or quiet mode. Freeze action. High score saved on disk. Complete instructions on disk. For Apple II/II+. 48K req. **Special Introductory Price!** Send \$15 to Successful Software, 2232 Crosswind Drive, Kalamazoo, MI 49008.

PINEWOOD CAR DERBY

Computerize your derby with unique program. No more hassle with charts and errors. Multiple level elimination plus many options. Display entries, pairings, and winners on TV monitors for spectator viewing. Save results for printer output. Pinewood, Space Derby or like events. Send for free info package: JAYBEE COMP, 16250 Levan, Livonia, MI 48154.

PRO-TEXT is a powerful text formatter for the Apple Pascal System. It has more formatting features than Apple Writer or Word Handler. Ask for brochure or send \$50 to: Apple-Pro Software, 200 Bicentennial Circle #201, Sacramento, CA 95826.

WIZARDRY MAPS

Know where you are! Complete maps of all ten levels. Send \$5 postpaid. To Stanley Kasper, 4932 N. Ridgeway, Chicago, IL 60625. Knight of Diamonds coming soon!

THE PREDICTOR

Predict Winners for U.S. Football. By Jim Jasper, author of *Basic Betting & Sports Betting*. 67% accuracy over last two years. \$39.95. Req: 48K Apple II or II+ w/Applesoft in ROM. DOS 3.3, 1 disk drive. See your local Apple dealer or write to Pickam Software, 312 S. Los Angeles St., Los Angeles, CA 90013; (213) 687-9530.

TAX FORM VISICALC MODELS

Compute tax and print tax forms. 10 federal forms or schedules \$20. 10 Cal state forms \$20. Specify forms. Both \$35. Best way to see "what if" tax scenarios. Advantage Systems, 910 El Toro, Ojai, CA 93023; (805) 646-2249.

SOFTALK CLASSIFIED ADVERTISING

WARGAMERS!!

Programs now available to assist play of popular board wargames. Game assistance programs increase enjoyment and playability by eliminating bookkeeping & endless die rolling. *Send now for a free catalog of programs in stock.* TRILOBYTE SOFTWARE, INC., 7820 Exeter Street, New Orleans, LA 70126; (504) 733-3195.

MEDICATION SAFETY

Home Educational Programs answer hundreds of questions about how drugs can be taken safely and effectively. Input specific medications for potential interactions with food, alcohol, or other drugs. Order: "Consumer" Drug Watcher. Applesoft/disk/48K, \$39.95 (CA res add 6%).

MEDICAL WATCH SOFTWARE

1620 Ensenada Dr., Modesto, California 95355

STOCK MARKET SOFTWARE

Increase your profits with OPTIONX, the ultimate option analysis program for the Apple computer. Price \$145.00 including a 65-page manual. In CA add 6% tax. Send for free brochure describing OPTIONX and other sophisticated investment software.

CRAWFORD DATA SYSTEMS

350 N. Lantana, Box 3000-561C
Camarillo, CA 93011

OPTION-INVESTING PROGRAM

Maximize your profit. For APPLE, TRS-80, IBM PC. Money-back guarantee. \$125. M/C & Visa. Free brochure. OPTIONS-80, Box 471-M, Concord, MA 01742.

Softalk's classified advertising section offers a considerably less expensive way than display advertising to reach tens of thousands of Apple owners.

Classified advertising space is available at the rate of \$10 per line for the first ten lines, with a five line minimum. Each line over ten lines is \$25 per line. Ad copy should be received no later than the 10th of the second month prior to the cover date of the issue in which you want the ad to appear. Payment must accompany ad copy.

The publisher reserves the right to reject any advertising that he feels is not in keeping with the publication's standards.

Heads will be set in 10 point bold face, all capitals only. Italics are available for body text only; please underline the portions you would like italicized.

The body text of the ad will hold roughly 45 characters per line. Spaces between words are counted as one character. Heads will hold roughly 24 characters per line, with spaces between words counted as one character. Please indicate if you would like the head centered or run into the text.

Please write or call for additional information.

Softalk Classified Advertising
11160 McCormick

Box 60

North Hollywood, California 91603

Attention: Linda McGuire

213-980-5074

THE GAME EXCHANGE

P.O. BOX 770, BELLEVILLE, IL 62222

Apple II Gamers! Send us your finished game disk and tell us which games and alternates you'd like. For a fee of \$5.00, we'll exchange your disk with that of another gamer. Trade Adventures for Adventures, Arcades for Arcades. If we're unable to arrange trade in 4 wks., disk and money returned. Include all original material and pack securely.

AT LAST! A BETTER WAY TO BUY SOFTWARE!

The Problem: Even with ads and reviews, it's hard to judge if a program will be enjoyable. *The Solution:* Join CompuFun—a unique club that enables you to evaluate software *before* you buy! STOP WASTING YOUR SOFTWARE DOLLAR! Send today for *free* membership kit. CompuFun, Dept. S-4, 5753G E. Santa Ana Canyon Rd., Anaheim Hills, CA 92807.

A-STAT 79.6C

Comprehensive statistical analysis system. Frequencies, Crosstabs, T-Tests, ANOVA, Correlations, Multiple Regression with Residuals, Data Entry, Sort, Reports, Transformations, Merging, Aggregation; Apple Plot, File Cabinet, and VisiCorp DIF Interfaces. For the Apple since 1979. \$175.00 complete from: Rosen Grandon Associates, 7807 Whittier St., Tampa, FL 33617; (813) 985-4911.

APPLE INTEGRATOR

Use your APPLE II+ as a high-performance laboratory integrator for automatic peak analysis of GC, HPLC and amino acid analyses. The option consists of a plug-in interface board and associated software.

The peak detection software automatically determines when a peak is eluting, corrects for base line drift, calculates peak retention times and peak areas, including those of shoulders and trailing trace peaks. Automatic reporting of post run analysis including response factor calculations is included. Printer plots of eluting peaks are provided.

The system requires a 64K APPLE II+ with disk drive and an Epson MX-80 printer with Grafrax. Price \$895. Texas Environmental Analysts, 2102 Thames Cir., Austin, TX 78723.

E-Z PILOT by Earl Keyser

Write your own school lessons or entertaining programs with the easiest of all computer languages — E-Z PILOT. Add colorful graphics, sound, and large, colored letters for emphasis. Anyone can do it! Requires 48K and DOS 3.3. Comes on a copyable diskette with a thorough manual for only \$41.45. TECK Associates, Dept. S, P.O. Box 8732, White Bear Lake, MN 55110.

INVESTOR SOFTWARE "Golden Analyzer"—IntraDay Stock Strength indicator forecasts movement—Amazing accuracy! Uses hi-low-close-vol-mov avg/VisiCalc reqd-\$29.95. "Risk/Reward Analyzer"—Sophisticated option strategies/Novice-to-Expert. Probability-Hedging-Margin-Ratio-etc. \$350. (415) 838-0906. Golden Enterprises—Box 445—San Ramon—CA 94583.

AG SOFTWARE

Farm Accounting for Apple III and Apple II—\$600. Also available for the Apple: Crop Production Analysis, Land Purchase Analysis, Loan Repayment, and Series 110 (which covers livestock, crop, financial management programs). Developed and written by ag consultants who work with farmers like you! Phone (712) 364-2135. Write: Ag Plus Software, 906 S. Main, Ida Grove, Iowa 51445.

WINTER SPECIALS!

D.B. Master

Replay Card	GraForth
Crossword Magic	Time Zone
Sensible Speller	D.B. Stat Pak

We've got *super specials* and *unbelievably low prices*. Call or write for free price list. Bytes & Pieces, P.O. Box 525, Dept. S, E. Setauket, NY 11733; (516) 751-2535; Source TCP 637.

VERBATIM Datalife minidisks for your Apple. Reinforced centers, certified 100% error-free. Only \$27.95/box of 10. Packed in plastic file box \$2 more. **THE SOFT SPOT, INC.**, Dept. S4, P.O. Box 212, Corbett, Oregon 97019. Please include \$2 shipping/handling. Send for our catalogue. VISA/MC now accepted. Verbatim Datalife and Apple are registered trademarks.

APPLE TEXT FILE TUTORIAL

Step-by-step disk-based introduction to Apple sequential text files. Teaches you to read, write, use, and EXEC. \$15.00 (Calif. residents add 6½%). Send check to Computer Explanations, 2438 La Condesa Dr., Los Angeles, CA 90049.

WOMEN'S GYMNASTICS

Scoring method for a 1 disk drive, 48K Apple + printer. Instant meet results; uses 1982 USGF tie breaking rules; trophy results, team ranking, complete contestant ranking, neutral deductions identified; record and display judges' scores; score Class III through championship Elite meets. 3 years to perfect; used nationwide. \$95.00 to D.U. Phillips, 7056 S. Spruce Dr. W., Englewood, CO 80112; (303) 771-0120.

MACRO-TREND

New totally automated commodity trading system for the Apple II+. Generates entry points, exit points, reversals, and protective stops. Daily telephone data updates from Commodity Systems, Inc. One year program lease is \$2,500. Test system with our demo diskette. To obtain demo diskette and complete documentation send \$20 to: Steven Bollt, 7420 Westlake Terrace, Suite 1509, Bethesda, Maryland 20817.

BOOK KEEPER II

with *CHECK WRITER II*. Yes, a unique single entry Book Keeping system for the Apple. As you write your checks, have 300 General Ledger Accounts and unlimited Account distribution. *BUSINESS* or *PERSONAL* use. 300 Payable vendors on file. 1,000 entries per month. Monthly and YTD Totals. Visa, MasterCard. Dealer inquiries. *MARK/DONN ASSOC.*, Box 1589, Marietta, GA 30061; (404) 422-8169.

ZAPPED! Great party game, 2-4 players or alone with Apple II. Roll dice for points but don't get **ZAPPED**. Req: 48K, DOS 3.3, ROM Applesoft. Send \$14.95 check or M.O.; **Mighty-byte**, P.O. Box 6115, Saginaw, MI 48603.

ORGANIZE YOUR LIFE!

Keyword retrieval system designed for journal articles and case histories. Unlimited uses (recipes, magazines, slides, etc.). Supports *multiple* disks; *each* record variable up to 2,560 characters; keyword search using logical operators (and, or, not). Unprotected disk—\$49.95. Source listing and documentation add \$25. Applesoft in ROM/DOS 3.3/48K. R. Penman, 5132 Oak Point Way, Fair Oaks, CA 95628.

APPLE SOFTWARE DIRECTORY

Over 500 Apple programs with full program descriptions, prices, and ordering information. Available at Apple dealers, bookstores, or send \$4.95 to: The LAMA Software Directory, Box 201, Bloomingdale, IL 60108. Next deadline for program listings is March 31, 1983.

MINUTE MANUAL FOR APPLE WRITER II

Get started in a minute with our complete and easy user's guide for beginners. Quick, ready reference for *The six basic "getting started" procedures *Epson printing procedures *Plus handy guide to wordprocessing methods *Plus guide to hardware/software enhancements. Send \$5.95 + \$1 shipping to MinuteWare, Box 2392, Columbia, MD 21045; (301) 995-1166; MD tax 5%.

STEAM TABLES

Thermodynamic Properties of Steam and Water. Disk includes Compiled Version and Applesoft Basic Source Code for insertion into your programs. Requires APPLE II+ and DOS 3.3. Send check for \$50 or company P.O. to Pope, Evans and Robbins, Inc., 320 King Street, Alexandria, VA 22314; (703) 549-2884.

AWESOME SOFTWARE

Entertainment, Business, Education - - - Software and hardware for Apple computers at LOW LOW prices. Call or write for FREE catalog.

Awesome Software
P.O. Box 2905
Covina, CA 91722
(714) 594-3333

APPLE TABLET ALTERNATIVE

APPLEJOY enables you to input graphical data into your CAD systems through a joystick. Don't accept other products which restrict you to their graphics systems. APPLEJOY gives you complete flexibility by enabling you to develop your CAD system around a very professional input media. Apple II+, *specify* Basic (DOS 3.3) or Pascal. Send \$29.95 to: MICON/5851 Via Sonora/Yorba Linda, CA 92686.

SOFTWARE FOR BARTER, SALE OR RENT

All types (Business, Entertainment, Personal, Educational). For free catalog write: MATECH INC., P.O. Box 423, Walkersville, MD 21793.

SAVE TIME, MONEY, GAS

Start your next trip with a computer listing of the **BEST ROUTE**. ROADSEARCH computes the shortest practical route and more! Prints the route with miles, time and gallons. Contains 372 USA/Canada cities and 69,000 road miles. Ten day **MONEYBACK GUARANTEE!** \$34.95 (plus \$1.50 S/H). Check/VISA/MC. Columbia Software, Box 2235M, Columbia, MD 21045; (301) 997-3100.

SOFTWARE AUTHORS WANTED:

Join the Software Authors Association and receive the benefits other successful software developers enjoy: Publishing assistance, contract and royalty counseling, "software wanted" listings, software development network, and bi-monthly newsletter. Send \$25 annual membership to Software Authors Association, 96 Wood Acres Dr., E. Amherst, NY 14051.

PERDAT+ FILE MANAGEMENT

This system establishes text/numeric files for mailing, phone, inventory, schedules, memos, and statistical analysis. Edit, sort, search, copy, print, calculate, & report procedures. Great for income tax table preparation. DOS 3.3, 48K and one drive are needed. Manual—\$10; Diskette & Manual—\$35. Send check to PERDAT+, 5231 Chamblee-Dunwoody Rd., Dunwoody, GA 30338.

"HELP" IS IN STOCK at Leigh's Computers where we offer support before and after the sale. We carry Apple, Atari, Franklin, TI, Vic-20, Commodore 64, and Timex hardware/software; peripherals including printers, modems, and monitors; Atari, Intellivision, ColecoVision game units & cartridges. Stop in today and get our expert advice and friendly service. Leigh's Computers, 212 E. 85th St., New York, NY 10028; (212) 879-6257.

* **NOT FOR PILOTS ONLY** *
* **AIR NAVIGATION TRAINER.** Real-time simulator, hi-res graphics, sound, *
* VOR's NDB's, ADF, airspeed, wind, heading, ground track, 4 simulations, VOR *
* Demo (for beginners), 48K, DOS 3.3, ROM *
* Applesoft, \$40 ppd, MC & VISA. SPACE- *
* **TIME ASSOCIATES**, 20-39 Country Club *
* Dr., Manchester, NH 03102; (603) 625-1094. *

AMAZING LOW PRICES!

We sell Apple software at such low prices you have to see it to believe it. See for yourself. Send today for our *free* price list. Gold Ox Software, 1 Woodcrest Drive, Scotia, NY 12302.

- CEEMAC -

The Visual Composition System
Language Of Fire Organ,
The Original Soft Visual Album
→ \$75 ←

Vagabondo Enterprises
1300 E. Algonquin - 3G
Schaumburg, IL 60195
(312) 397-8705

- Visa & Master Charge Accepted -

WIZARDRY PLAYERS

Modify your characters with this utility program. Resurrect the dead or lost. Alter characteristics, spells, hit, experience & gold points. **CHEAT!** Make yourself a 1000th level super hero for Knight of Diamonds. Disk, 48K & Applesoft. Includes maps. \$20.00. California residents include 6½% sales tax. ARS Publications, 3710 Pacific Ave. #16, Venice, CA 90291.

APPLE III USERS, RUN MORE APPLE II JOYSTICK GAMES

Cable connecting ports A and B to joystick (Cursor III or TG) does the job. Also adds graphics. Send \$60.00 to Cable, P.O. Box 316, Newton Highlands, MA 02161; (617) 965-3948.

QUALITY MICRO PRODUCTS

Apple, TRS-80, Xerox 820. Over 75 manufacturers, *special prices!* For free catalog write or call ODYSSEY DATA PRODUCTS, 9014 W. Broad St. Rd., Richmond, VA 23229; (804) 270-1992.

HOSS

Thoroughbred Handicapping Tutorial
Learn computer race handicapping methods. Five Complete Systems, track, speed, jockey, etc. factors. 200+ page handbook includes Applesoft documentation & disk. User Modeling Coefficients to meet YOUR needs. Menu driven, Apple II+, DOS 3.3. \$89 incl. tax. TOUT Company, 360 S. Gordon, Pomona, CA 91766.

SAVE AT SOFT WAREHOUSE

We offer the lowest prices on business, education and entertainment software. All major brands are available. Write for our free price list.

SOFT WAREHOUSE
P.O. Box 153
West Islip, NY 11795

WANTED: MICROCOMPUTER BUFF who wants a full time job programming. Must be familiar with Basic language on Apple, Pet, TRS-80 or Atari. Classroom experience helpful. Send resume or call: Gamco Industries, Inc., P.O. Box 1911, Big Spring, TX 79720; (915) 267-6327.

!LOW SOFTWARE PRICES!

No Membership Fees—No Clubs to Join
WRITE FOR FREE BROCHURE
VALLEY SOFTOUCH
4974 N. Fresno St., Suite 132
Fresno, CA 93726

exec penguin software



GRAPHICALLY FREEZING



*f it laid an
egg, it would fall down the back of the
television set.*

Publishing software can be fun.

Okay. It's a dog-eat-dog world. The powerful and wealthy are as desperate as the poor and unimportant. Information has become the lifeblood of our society, but its circulation isn't great. Everybody's looking for the answers or looking to get out.

Okay. Times are rough. The movie industry is struggling. The steel industry is gasping for breath. International Harvester is losing more money this year than Daddy Warbucks made in his whole life. Unemployment is out of sight. And no one can say for sure when the tide will change.

Chilly Willy caught the last train to the coast.

Okay. We're under the gun. Living for work and working for a living. There isn't a lot of room for mistakes, and the pressure is intense.

Okay already! It's bad, but at least one hope remains.

Publishing software can be fun.

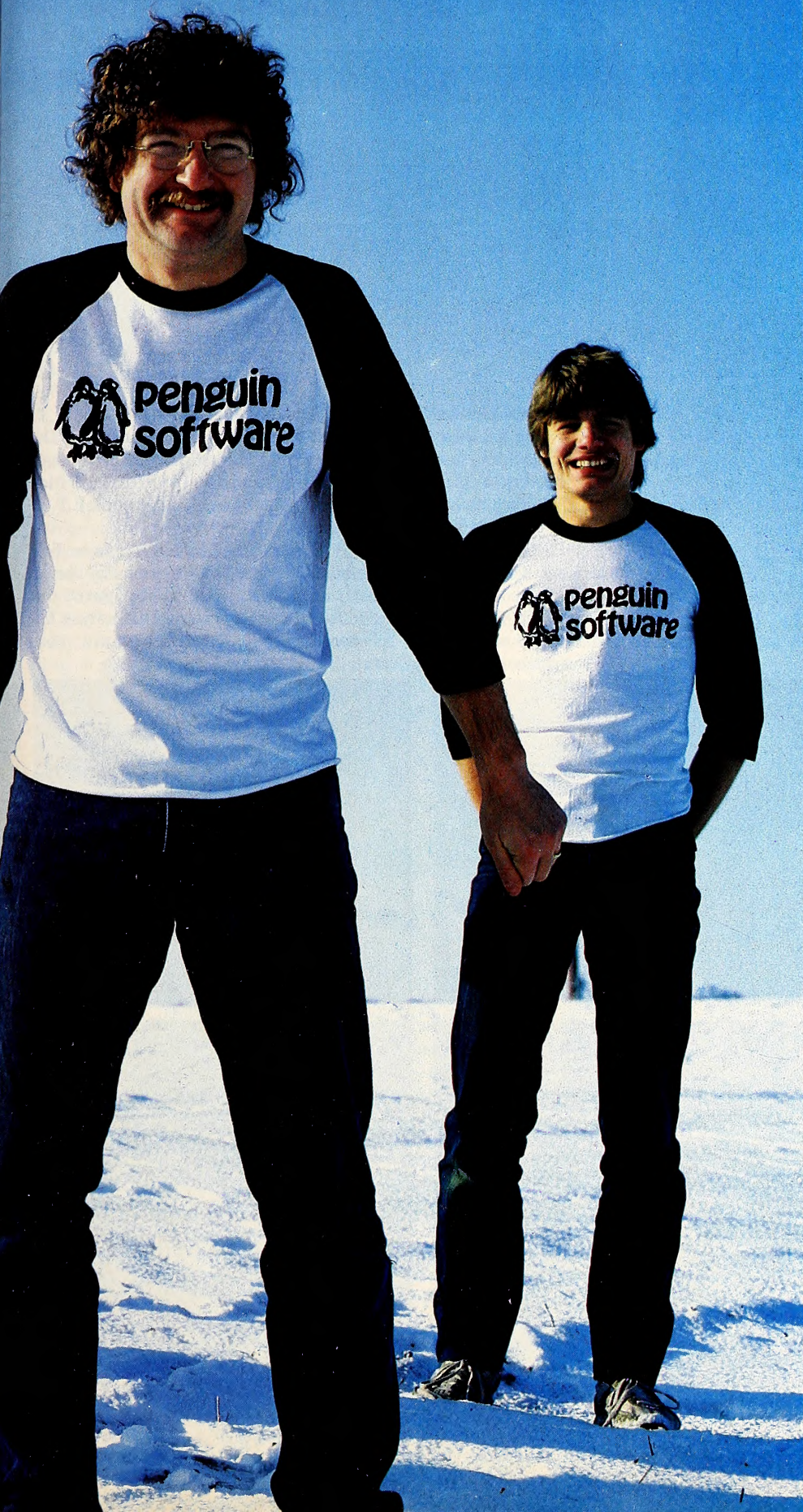
"Penguins Don't Come from Next Door!"

Penguins are famous for surviving in even extremer conditions than our frosty economy and its persistent cold fronts. A penguin's native habitat is the frozen wastes of the Antarctic Circle. The temperatures range from a pitcher's batting average to the total yearly rainfall in Death Valley. In other words, low.

Penguins can't fly. Penguins can't rob banks

by David Hunter

When driving through rural northern Illinois it is possible to catch glimpses of the wildlife. We were lucky to capture this scene in Geneva, an hour west of Chicago. The denizens of the chilly midwestern plains in the picture are neither penguins nor humans. They're software publishers.





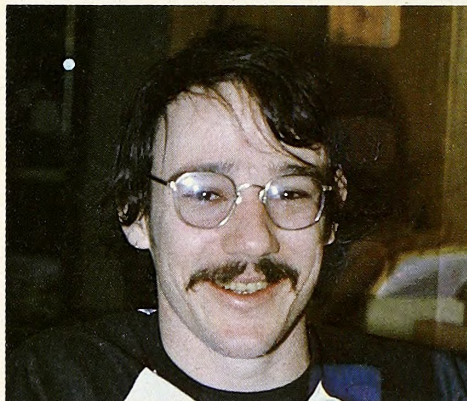
or play hockey. Penguins are not normally baseball players. Penguins are erect, short-legged, flightless, aquatic birds. Fun as it may be, no penguin has ever published software.

Penguins are boring, but they're cute. They nonchalantly peck away their lives in the most severe of Earth's climates. Penguins don't brag; they can't talk.

Noble, but embarrassingly harmless, penguins are probably the descendants of some ravenous aquatic dinosaur. You say times are rough? Look at penguins. They're content to be shrimps who were once terrifying behemoths. They don't make war and they don't pay taxes. They've progressed little; they've digressed considerably.

So who are these goofs who call themselves Penguin Software? Do they come from Alexander Island near the Bellingshausen Sea? Did they buy their first Apple at the only computer store on all of Rockefeller Plateau? Do they eat raw fish and dance on ice floes? Do they look E.T. in the eye when they stand up straight?

"Hello. It's Just After 8:00 P.M. and Time for the Penguin on Top of Your Television Set To Explode." What kind of penguins live in Geneva, Illinois? That's where Uncle Bob and Aunt Betsy junked the Edsel when it threw a rod and rolled into a cow pasture. That's where Elvis stopped to change his belt once. It's so far from the big town, most Chicagoans think it's in Iowa.



Top of page, Penguin president Mark Pelczarski ("We try not to take ourselves seriously, but we take our products and service seriously"). Top row, bottom of page, from left to right: Mary Locke ("This company is run on coffee, M&Ms, and beer"); Dave Albert, bumper car champion of the world; Cheryl Pelczarski, the one-person graphics art department. Bottom row, from left to right: Trish Glenn ("White Castles are an essential part of the Penguin diet"); Mary Beth Pelczarski ("You know having an animal around keeps the blood pressure down"); Todd Porter, who'll tell you what you can do with your *Complete Graphics System*.

Geneva is a hotbed of midwestern normalcy. Neighboring Saint Charles is even worse. One expects to meet the Ray Conniff singers walking down main street. The local White Castle plays host to Michael Landon and Burl Ives. This place has got class and it's the last place you'd expect to find penguins. The nearest zoo is O'Hare Airport, thirty miles away.

The small flock of creatures working out of a one-story house in Geneva, Illinois, are humans who merely call themselves penguins. Their leader is a curly-haired, bespectacled devil named Mark Pelczarski.

What kind of leader is this Pelczarski? You need not go any farther than the name. Sandwiched between Pel and ski is the best description of the Illinois-born software kingpin—*czar*. Need we say more?

Okay. Humans can be penguins, but can penguins be human? Can humans turned penguins be human? Does Tennessee Tuxedo dance the Charleston?

The story of Penguin Software defies easy classification. Is it a Western? A musical? A space opera? The only label that fits is comedy. And comical indeed is the continuing saga of Pelczarski and his flock of Penguins as they contentedly peck away in these times of economic woe.

"They Don't Stamp Animals Property of the Zoo!" It all started when Mark Pelczarski studied mathematics and computer science at the University of Illinois in Champagne. Unbeknownst to the future head Penguin, another great programmer was absorbed in the university's digital computer labs at the same time. Pelczarski and Bruce Artwick of SubLogic missed each other somehow. Darn! We might have had *Pie Man Simulator* or *Transylvanian Pinball*.

Wait, the story gets even funnier.

After graduating from college Pelczarski taught math and computer science at Sycamore High School, a junior college, and Northern Illinois University in De Kalb. All of you who follow his column, Graphically Speaking, in *Softalk* can imagine what that must have been like. And all of you who don't follow Pelczarski's column, don't sweat it.

Born and raised in and around the Chicago suburb of Clarendon Hills, Illinois, Pelczarski went for computers and programming like a penguin goes for the freezer. He taught programming for four years and seriously pursued the discipline on his own time. Early on he wrote a couple of programs for the Commodore Pet and had programs published in *Recreational Computing* and in *Cursor*, a magazine on cassette.

In the fall of 1979, while at Northern Illinois, Pelczarski got an Apple; two months later, under the guise of MP Software, he started to push *Magic Paintbrush*, the earliest predecessor of *The Complete Graphics System*, at computer stores in the Chicago area.

As fate would have it, programming won out and Pelczarski is no longer a teacher. The chalk and textbooks have been abandoned for Apple and utility programs.

The combination of his experience with computers, the fact that he had written good software, and his educational background landed Pelczarski a job at *SoftSide* magazine. Striking his best Fleet Street pose, Pelczarski packed up and went to New Hampshire to be the editor, no less.

Did he know what he was doing? "Oh no. I had done a little writing, but I had no journalism degree or anything like that." Pelczarski has trouble stifling a grin at the memory, but, floating to New Hampshire on a good-sized ice floe, puckish Pelczarski did well at *SoftSide*.

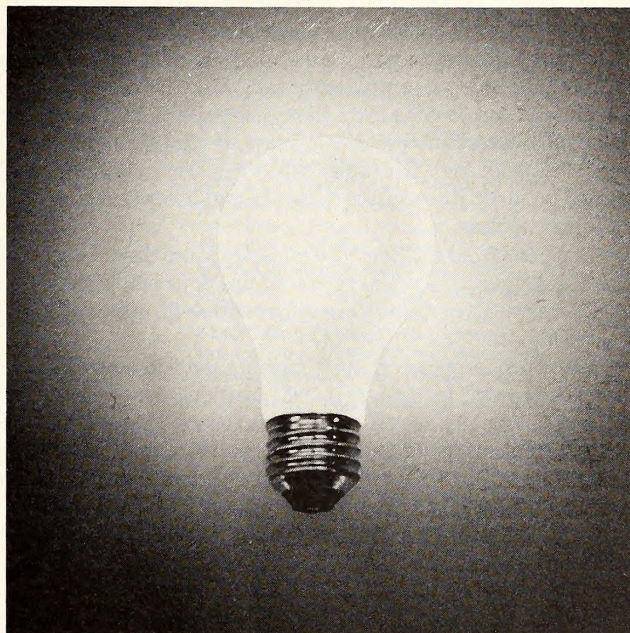
"It's Odd, That Penguin Being There." Pelczarski met his future wife, Cheryl, while he was teaching at Sycamore; she was a student at Northern Illinois University. By the time they both headed off to New Hampshire, they were married. A graphic artist, Cheryl Pelczarski worked for a local art agency while Mark tackled the magazine business.

Teaching at Sycamore, Pelczarski also became good friends with fellow teachers Trish Glenn and her husband Mark. A year or two later Trish would come to work for Pelczarski, helping to found Micro Co-op.

Pelczarski met his future business partner and soon-to-be fellow Penguin Dave Albert while at *SoftSide*. A real journalist, Albert knew little about computers and the two men learned much from each other. Something in their personalities jibed, and a rare friendship developed, growing stronger over the years.

We must make note of the fact that an early, crippling fit of Penguinitis (a rare disease) struck Pelczarski while he was the editor of *Soft-*

BEING CREATIVE IS NOW A LOT EASIER!



Let your imagination run free
and be as creative as you want with A.G.I.L.,
the professional graphics packages brought to
you by Animation Graphics, Inc.

Create pictures from backgrounds and shapes
of over a hundred colors and textures.

Draw with virtually endless shapes from
supplied libraries or use ones of your own
inspiration. Save sequences of animated displays
and produce a Super Slide Show.

You are in control of a complete set of
powerful graphic tools from the
Animation Graphics Illustrator's Library.

Whether you are preparing a draft layout for
an office, lecture illustrations, or a sales
presentation, A.G.I.L. helps you express
your ideas, graphically.

(703)471-0740

For more information, write or phone, or better yet,
contact your dealer for a demonstration.

AnimationGraphics

I N C O R P O R A T E D

11317 Sunset Hills Road, Reston, Virginia 22090

Applesoft and Apple are trademarks of Apple Computer, Inc.

Side. Someone who had seen *Magic Paintbrush* wrote a letter asking if MP Software stood for Mark Pelczarski or Magic Paintbrush. Pelczarski answered that neither was correct; it stood for Magnificent Penguin.

You have to be slightly wacky to get into the software publishing business, and Pelczarski proved early on to be made of the right stuff. He loved the title Magnificent Penguin and it became his nickname for the duration of his stay in New Hampshire.

All through his reign as editor of *SoftSide*, Pelczarski practiced programming and had a bunch of little pieces printed in the magazine. They were mostly simple games, easy animation routines, programs for making shape tables, and the like.

In the middle of 1980, Pelczarski began entertaining notions of forming a software cooperative that would inform its members of the latest and greatest software via a newsletter and offer that software at co-op prices. The idea was to go back to Illinois and spend full time on the co-op, living off savings from his teaching days. If after six months it wasn't working, Pelczarski had had other job offers. He considered it a fair gamble; so he made the essential decisions and left New Hampshire after only eight months.

"Perhaps It's from the Zoo." So much for journalism. Except for his monthly ink slinging in *Softalk*, Pelczarski has done little writing or editing in the last two years. Programming became his primary means of creative expression.

That is, when he wasn't putting together the latest issue of the Micro Co-op newsletter. In January of 1981, working out of his apartment, Pelczarski founded "the largest software cooperative in the world," or so the ads said. Eventually boasting more than three thousand members, Micro Co-op was and still is meant to be a source of evaluative information and software for the discerning buyer.

The magnificent Pelczarski really thought that Micro Co-op was the way of the day. So much so that he sought ways to bring money into the business. Pelczarski the programmer went to work.

In March 1981, *The Complete Graphics System* appeared on the market under the label Co-op Software. No one was fooled. The toddling baby penguin in the logo was hard to miss. Half a year later, that penguin would grow up.

The Complete Graphics System was the first part of a trilogy of graphics utility packages that eventually became bestsellers. Boasting more than a hundred hi-res colors, 3-D graphics, the ability to create shape tables with paddles or keystrokes, and the option of putting hi-res text anywhere on the screen, *The Complete Graphics System* was heartily welcomed, breaking into *Softalk's* Top Thirty in September 1981.

Penguins can make mistakes. Pelczarski sold a lot more *Complete Graphics Systems* than he expected. The idea of seriously publishing software gained favor in Pelczarski's mind. Perhaps software cooperatives were not the answer.

Birth of a Penguin. Lots of things happened in the summer of 1981. The baseball strike was settled. *Raiders of the Lost Ark* thrilled millions. *Raster Blaster* cleaned up. These are all minor events in the long run. For this was the summer that Penguin Software was born.

While Pelczarski flapped around starting Penguin, Trish Glenn took over the operations of Micro Co-op. She has been incredibly valuable, according to Pelczarski, and can lay claim to being the first true Penguin other than Mark and Cheryl. "She's the one that gets things done," Pelczarski says.

Pelczarski suffered from Penguinitis all that year. When he thought of an image for his company, all his Spheniscidae mind could conjure up were penguins. In delirious moments he admits that he truly came to appreciate penguins with the help of the irreverent English comedy group Monty Python. Their funky vignette "Penguin on the TV," on the album *Another Monty Python Album*, has haunted Pelczarski for years.

Another Monty Python routine, which has Scott of the Antarctic battling a giant electric penguin, doesn't seem to bother Pelczarski at all. For whatever reason, demented or deliberate esthetic choice, penguins it was going to be.

Still working out of his apartment, Pelczarski programmed like crazy, mainly in Basic and assembly language, through the summer of 1981.

"Each of the graphics programs is a combination of languages. The editors are written in Applesoft, while the graphics routines are in assem-

bly language," Pelczarski explains. "I like Basic because it's easier to understand when debugging. There are also a lot more utilities for it."

His next offering through the newly born Penguin Software, *Special Effects*, appeared in September 1981. Another graphics utility, dubbed "for the artist" in subsequent ad campaigns, *Special Effects* allows you to paint, more or less, on the Apple with many useful features including shading, magnification, color reversing, and partial screen movement.

Wizards and Penguins. The third part of Penguin's graphics trilogy, this one "for the programmer," was released at the beginning of 1982. Originally credited to Chris Jochumson, Mark Pelczarski, and friend, *The Graphics Magician* contains the collected wit and machine language animation routines for the creation of computer games and other programs needing quick manipulation of visual elements. Friend was eventually revealed to be David Lubar, who is now programming for Sirius.

For a good part of 1982, the trilogy was really a tetralogy with the Space Tablet, produced by Micro Control Systems, rounding out the foursome. Boasting 2-D and 3-D drawing capabilities, Micro Control's graphics tablet came complete with a customized version of *The Complete Graphics System* designed to accept input from three dimensions.

"I agreed to be the distributor, but Micro Control kept changing designs in the hardware," says Pelczarski. "We like to fill orders in the next day's mail, but the difficulties of hardware changes made keeping up with the demand difficult. Eventually, we worked it so that people now go directly to Micro Control for the system."

Albert had taken over as editor of *SoftSide* when Pelczarski quit, but he left for a stint as a proofreader of "trashy adult Westerns. My big claim to fame," he says, "is having proofread *Halloween II*." Albert had been back at *SoftSide* for a month when Pelczarski called. It was the end of 1981. Reeling from success, Pelczarski asked Albert to come work in Geneva.

Born in Venezuela, Albert began his journalism career on an English language newspaper, *The Daily Journal*, in Caracas. Destroying the myth that penguins don't like to travel around, Albert has lived in Venezuela, New Hampshire, Connecticut, the Bahamas, Switzerland, Los Angeles, and Iowa.

Albert attended college at the University of Iowa in Iowa City, with a double major in journalism and American studies, emphasizing communications theory. He met his future wife, Mary Locke, while at the university. She was a photographer on the university's student paper, *The Daily Iowan*, when Albert was the managing editor. The two worked together at *SoftSide* and both succumbed to Penguinitis at the same time.

Ms. Penguin. Today Mary Locke is one of the key Penguins, defining the experience and ensuring that future Penguins will keep the faith. She takes care of the dealers while Albert and Pelczarski drink beer. A little taller than one would expect a penguinized human to be, Locke has a lively sense of humor and believes wholeheartedly that publishing software is fun.

Albert came on in the beginning of the year to take the pressure off Pelczarski, taking over the operations of Micro Co-op and its newsletter. In the summer of 1982, Pelczarski sold Micro Co-op and he and Albert ceased having any involvement with the business.

Since then, Albert has participated in Penguin's daily activities, mainly handling the marketing. Not a programmer, Albert has, nonetheless, had some input into Penguin's products. He rewrote the text for the graphic adventure *Transylvania* and carries his load of the never-ending task of testing and retesting a new program before it's released.

Only a few months ago, Penguin Software moved out of Pelczarski's home into a single-story house on Hamilton in Geneva. Albert and Pelczarski share an office in the living room. Pelczarski still spends time at home programming, but the rest of the Penguins flock daily to the office/house. The kitchen refrigerator is well-stocked with beer and the cupboards with M&M's.

As fun as publishing software is, there are bound to be some sore spots. The Penguin people have met head on the single most difficult problem in the industry—piracy. In March 1982, Pelczarski wrote a letter to several publications announcing a change in Penguin's policy toward software protection.

Coinciding with the release of *The Graphics Magician* and the updated *Complete Graphics System II*, Penguin's announcement was a plea

Einstein.^{T.M.}

**YOUR APPLE CAN RUN UP TO
TWENTY TIMES FASTER
FOR ONLY \$79.95
WITH RESULTS GUARANTEED!**

If you take the time to read this message, you'll learn how to save 50 or more seconds out of every minute of execution time for every program you write or use.

ANNOUNCING:

THE EINSTEIN COMPILER— The new compiler that provides an easy means by which Applesoft programs written for the Apple computer may be swiftly translated into machine language...

...as a result, the compiled version of your program can be executed from 2 to 20 times faster!

Benchmark tests reported in an *Interface Age* article have compared the relative execution speed of different versions of the BASIC language running on several brands of microcomputers. Based on these comparisons, if you are running programs in Applesoft, you are not even placing in the top third of the speed standings.

That was before **THE EINSTEIN COMPILER.**

When the same test program for the Apple was first run through THE EINSTEIN COMPILER, the compiled program ran so fast that the Apple's speed standing jumped to second place...being beaten only by some exotic experimental computer.

Thus, if you are an Apple user with THE EINSTEIN COMPILER, writing programs in Applesoft, you can now have your BASIC program judged second in the same speed comparison.

THE EINSTEIN COMPILER is extremely easy to use. There is no BASIC syntax to learn, and 95% of your compilations can be performed with one simple command...You need only load your program, insert THE EINSTEIN COMPILER disk into your drive, type "BRUN EINSTEIN" and then save and run your compiled program. It's that simple. It's that fast.

THE EINSTEIN COMPILER is a breakthrough in new programming utilities that rapidly translates your Applesoft programs into machine language that is fast, efficient, and compact. When you use THE EINSTEIN COMPILER, all the features of Applesoft are fully supported, including the use of Hi-Res graphics, shape tables, Lo-Res graphics, defined functions and DOS commands. Moreover, THE EINSTEIN COMPILER is the most powerful compiler on the market in its level of code compression and string handling capabilities.

Here are the more impressive features of

THE EINSTEIN COMPILER:

EASE OF USE: The program is professionally human engineered. Thus although the compiler is very powerful, it is incredibly easy to use by beginners and experts alike. Clear, comprehensive documentation is provided.

DOS COMPATIBILITY: All DOS functions and commands are supported in exactly the same way as in the uncompiled Applesoft program.

CODE COMPRESSION: a unique memory compression algorithm is employed and pre-existing Applesoft routines are exploited to keep the size of your compiled program to an absolute minimum.

STRING HANDLING: The fastest dynamic string handling available; static string handling for passing strings between program modules.

MEMORY CONTROL: Complete control over memory usage; programs and run-time library can be compiled to reside in almost any memory location.

LOCAL / GLOBAL VARIABLES: Variables (including strings) may be designated as "local" to a compiled program or "global" to all compiled programs in memory, thereby facilitating inter-program communications.

COMPILE STATISTICS: Complete statistics are generated at compile-time such as total memory requirement, symbol table listing including memory addresses for all variables, starting address of the compiled code for each line of the Applesoft program, etc.

PROGRAM DEBUGGING: Erroneous statements are flagged with standard error messages, and you have the option to stop compilation at any time; debugging of compiled code is aided through use of such tools as TRACE capabilities and comprehensive program statistics.

HARDWARE REQUIREMENTS: Apple II+ with 48K, Apple III, or Apple II with RAM card or Applesoft in ROM. One disk drive. DOS 3.3.

**INTRODUCTORY PRICE AND
TOTALLY RISK-FREE OFFER**

Probably the greatest feature of THE EINSTEIN COMPILER isn't its operating benefits—it's the risk-free trial offer we are willing to make to you.

If, within 45 days of the date you first receive THE EINSTEIN COMPILER, you decide for any reason it isn't worth much more than you paid for it—in time saving and improved performance of your Apple—simply send the original program disk back to us in its original binder. You don't even have to explain why. A refund of all the money you paid will be returned to you promptly. No questions asked; no hard feelings either.

The retail price, when THE EINSTEIN COMPILER starts appearing in computer stores, will be about \$119.95.

But, now as a special introductory offer, readers of SOFTALK may purchase THE EINSTEIN COMPILER directly from The Einstein Corporation for just \$79.95 delivered to you by special class mail.

That's a solid saving of \$40. Plus, you'll receive an extra \$30 discount if you send us the disk of any other published compiler with the original label on it. (Your disk will be returned to you.) This will bring your net

price down to an incredibly modest \$49.95 for one of the most sophisticated software packages ever created for the Apple.

By the way, **THE EINSTEIN COMPILER** with its innovative memory compression option can reduce your compiled program size by up to 50 percent over uncompressed machine language code; and what's more, this memory compression is accomplished without sacrificing speed of program execution. Besides providing a tremendous decrease in program execution time, **THE EINSTEIN COMPILER** has ingenious features that enable it to become the most useful addition to your Apple software library.

To find out first hand at our risk, fill out the order form and send it back to us right away. We promise your modest investment in THE EINSTEIN COMPILER will come back to you many times over in the next 45 days or you may return it for a complete refund.

There is nothing like this program anywhere in the world. We should know. We are the same programmers who wrote Expediter II, and we have spent 4 man-years of our lives developing and perfecting our latest creation, THE EINSTEIN COMPILER. You have our word on its quality.

Most sincerely yours,

Dennis S. Goodrow, B.Sc.

Shmuel Einstein, Ph.D.

The creators of
THE EINSTEIN COMPILER.

Please rush me a copy of the new EINSTEIN COMPILER on a 45-day money-back trial basis. My payment is enclosed.

☐ \$79.95 (a solid \$40 saving)

☐ \$49.95 (I've included my old compiler disk and am taking advantage of the extra \$30 discount.)

California residents: add sales tax.

Offer expires April 1, 1983.

Form of payment:

☐ Check ☐ VISA ☐ Mastercard

Card Number: _____

Expiration Date: _____

Name: _____

Address: _____

City: _____

State: _____ Zip: _____

Send your order to:

The Einstein Corporation
11340 W. Olympic Blvd.
Los Angeles, California 90064
(213) 477-4539

to the software buyer. Speaking as a programmer, Pelczarski explained how he appreciates the need for applications software to be unprotected and modifiable. Speaking as a publisher, he voiced the fear that "casual" copying by a few bad or, even worse, unthinking people can put a small company out of business.

Pelczarski's overriding concern for the good customers won out. The graphics utility trilogy was unlocked and the industry held its breath. Would the Penguins perish? Had the answer to the piracy problem been found? If Pelczarski trusted consumers instead of penalizing them with the extra time and cost of copy protection, would they respond with the same honesty?

If ever there was a clear answer to all these questions it appeared in the results of *Softalk's* Bestsellers column through the last six months of 1982. The graphics trilogy was close to dominating the Hobby 10. *The Graphics Magician* and *Complete Graphics System II* both made the top thirty in December 1982's poll. The torrid sales were obviously buoyed by Softsel picking up Penguin's line in May. Still, Pelczarski's gamble paid off; people like to buy unlocked software. Honesty and trust worked.

"There! I've Run Rings around You Logically." In the final months of 1982, Penguin turned around and offered two arcade games and one adventure game, all protected. It's a different story with games.

"You can play a protected game," explains Pelczarski. "They don't depend on documentation like a utility program. That's why games are easily traded.

"I also can't take a chance with someone else's program. If it's my own graphics package, then it's my neck. I can't gamble with another programmer's work, though the idea of unprotected games is appealing."

All three games—*Spy's Demise* by Alan Zeldin, *Pie Man* by Eagle Berns and Michael Kosaka, and *Transylvania* by Antonio Antiochia—were created with the aid of the *The Graphics Magician*. This is much more exciting than the predictable news that none of the games was the next *Choplifter*. Adventure International, Sentient Software, Sunnyside Soft, and other publishers have used Pelczarski's utility for produc-

ing games such as *Gold Rush*, *Congo*, and *Scott Adams's Graphic Adventures*.

The big news is that Mattel Electronics's six new arcade games for the Apple use *The Graphics Magician*. They were first seen at the Consumer Electronics Show in Las Vegas this January.

So the times have been good for Pelczarski and his flock of demented Penguins. There are seven Penguins in all, and they eat together and play together. Two favorite hangouts are the local White Castle, with its regionally renowned miniburgers, and Funway Park in nearby Batavia, with its bumper cars and arcade games.

One day not too long ago, Dave Albert got wind that Funway was planning to get an Apple for interfacing with their in-house video system. Albert graciously offered a complete set of Penguin software in exchange for lifetime passes on the bumper cars. It worked. Nowadays, when the job gets to be too much, several Penguins will relieve the tension by smashing into each other in a friendly sort of way.

Penguin Software is a small company that seems content to stay that way, at least personnel-wise. Everyone works hard and does whatever job needs to be done. Everyone has a reasonably well-defined niche, but emergencies do occur.

Two fun-loving Penguins are Cheryl Pelczarski and Todd Porter. Cheryl is the one-woman art department, responsible for Penguin's advertising and other forms of visual marketing. Strong distribution is one thing, but effective advertising can make a big difference.

Todd Porter is the technical consultant. He works with customers who need programming advice in adapting Penguin's wares to a specific task. Just turned twenty-three, Porter looks to have a bright future with Pelczarski's bunch.

Rounding out that bunch is Mary Beth Pelczarski, Mark's younger sister, and Trish Glenn. Fiercely loyal Penguins and vocal supporters of Penguin rights, the younger Pelczarski and Glenn are the customer service department and anything else that's needed at any given moment. Mary Locke, Trish Glenn, and Mary Beth are the three funny ladies of Penguin Software. Together and in a good mood they are a riot—indomitable, powerful, and totally in charge.

The Great Penguin Train Ride. What's it like to be a Penguin? Things get done, somehow.

Mary Locke tells a terrific story about the Penguin trek to Applefest last May in Boston. When it came time to take a train from New York up to Boston, a few things went wrong. The train wasn't announced. Lugging boxes of merchandise and booth materials, Pelczarski and Albert barely made it on the train in time. Mary Locke and Cheryl Pelczarski had gone ahead of them and got separated.

The train was very crowded. Mary and Cheryl couldn't find a seat for themselves, let alone for the other Penguins on the trip. Eventually they found Mark and the others huddled on a vestibule between cars with all the boxes piled up precariously. This was how they rode the rails up to Boston.

Every day, working together, having epic snowball fights when it snows, and eating M&M's are part of being a Penguin. After work, the whole company can comfortably go out for a drink at Scotland Yard, a local drinking establishment in Saint Charles. They lunch together frequently at the Great Dane Mini Deli in downtown Geneva.

Camaraderie and esprit de corps among a group of people makes running a small business a real joy. Pelczarski is not a difficult man to work for.

A little wacko perhaps, but not difficult.

With two new games, *Thunderbombs* and *Crime Wave*, due out later this month, improved graphics software in the works, a few secrets, and one big surprise also due in March, Penguin Software is on course and flying high.

Ah, if only it were true. But penguins can't fly.

Penguin Software is on the ground and waddling ahead. Enjoying the winter weather and last year's profits, they are looking forward to their best year yet in 1983. Courageous and fun-loving, they must be on to something.

Publishing software can be fun.

The display quote at the beginning of the article and the quotes used as subheads are from "Penguin on the TV Set" on Another Monty Python Album.

Simple as Apple Pie !

SIMPLE*DOS

Rather be building files ... than reading about how to build them? SIMPLE * DOS eliminates the need to know DOS.

SIMPLE * DOS simply and easily creates and retrieves Applesoft usable files. The system builds your text file(s). Simple report and listing capability built in. User interface in BASIC allows simple and quick programs. Use immediately. No need to read thick user manual. No need to learn 'busy pseudo' command language.

SIMPLE * DOS is an effective tool for both novice and expert programmers and is available at a fraction of the cost of DBM packages.

\$49.95 (shipping included).

Apple II DOS 3.3 48K

Call Toll Free from anywhere:

(800) 522-1500, ext. 879

MasterCard / Visa. Dealer Inquiries Invited.

Complete satisfaction or money refunded.



A DIVISION OF PRT INVESTMENTS

PO Box 689-ST / 1376 Overlook Drive
Steamboat Springs, Colorado 80477

Apple is a registered trademark of Apple Computer Inc.

EVERYONE NEEDS A...



UNINTERRUPTABLE POWER SOURCE

ADVANCED DESIGN

NEW RELIABILITY

GUARDIAN PROTECTS

ELECTRONIC SAFETY

LIFESAVER FOR DATA



**SAVE YOUR DATA
FROM POWER OUTAGES!**

BACKUP FOR YOUR COMPUTER, MONITOR, PRINTER AND 5 1/4" FLOPPY AND HARD DISC DRIVE

- Automatically stops annoying problems from power line interruptions and brown outs • You need standby power to save data
- Maintenance free backup power available in 115 volt or 220 volt • 50 or 60 HZ • 150 watts • Complete versatility — operate your system from a 12 volt source, i.e., automobile cigarette lighter, boat or airplane • Rugged self contained gel cell battery
- No voiding warranty — no cutting wires • Automatic audio alarm warning tone during commercial power failure or interrupt
- UL listed • FCC approved • Transient voltage suppressor gives added insurance from line voltage spikes, utilizing Zener Ray™
- Green/red LED power status indicator • Green — normal AC line power • Slow blinking red — at least 6 minutes of remaining standby power • Fast blinking red — approximately 2 minutes of remaining battery power • Solid state technology unexcelled by any UPS power unit in its class.

RH ELECTRONICS, INC.

COPYRIGHT © 1981 - PATENTS PENDING

566 IRELAN, BUELLTON, CA 93427

(805) 688-2047

SEE YOUR RH ELECTRONICS PRODUCTS DEALER

FOR YOUR APPLE II™:

SUPER FAN II™	\$ 74.95
SUPER FAN II™/ZENER RAY™	\$109.00
SUPER RAM II™	\$125.00
RH 12 VOLT TRANSVERTER	\$149.00

FOR MICRO COMPUTERS:

GUARDIAN ANGEL™	\$595.00
-----------------	----------

THE BASIC Solution

By Wm. V. R. Smith

A frustration commonly experienced by microcomputer users is caused by the machine's inability to hold more than one Basic program in memory at a time. Whether you have 16K, 32K, or 48K of RAM on board, the computer's operating system just won't recognize the presence of two programs, even if the programs are tiny. Loading one while another is already in memory just wipes out the first. There seems to be no way around it.

The problem is not lack of space. There is a lot of memory space in the Apple that the typical Basic program doesn't take advantage of. The problem is that Applesoft always puts programs in the same place unless you tell it different.

Well, there are ways around this limitation, and this month we have a reader-contributed program to do just that. Ken Kashmarek of El-dridge, Iowa, sent in a program that tells Applesoft where you want a program to start in memory when you load it or type it in.

Incidentally, starting your programs in different locations can have other uses as well. For instance, when you're using hi-res page one and the program starts at the standard location (2048 or \$800), you can only make the program so long before the variables start overrunning the hi-res screen memory space. That length is usually about twenty sectors on the disk (varying according to how many variables are used)—a large program, to be sure, but there's much more memory left unused above the hi-res memory area. This program will let you use

that space. Or it will let you leave a protected area below your program for machine language routines.

The program isn't very complicated. Lines 100 through 170 give you a menu of possible start locations. If you don't want to select any of them, just hit return and you'll be given the opportunity to enter your own location. Hit return again to exit the program. Lines 180 through 240 handle these options.

Lines 250 to the end handle the pointer setting to allow your Basic program to begin somewhere else. The operative commands are the ones that poke numbers into 103 and 104 (the start-of-program pointer) and LOC (your starting location).

Note: Save this program right after you type it in (*before* you run it). If you don't take this precaution, you could lose it.

```

100 TEXT : HOME
110 LOC = PEEK (104) * 256: PRINT
    "CURRENT LOCATION = ";LOC:
    PRINT
120 PRINT "PROGRAM START
    LOCATION?": PRINT
130 PRINT "1. 2048 (2K)—DEFAULT SET
    BY FP": PRINT
140 PRINT "2. 3072(3K)—ABOVE
    LO-RES PAGE 2": PRINT
150 PRINT "3. 16384 (16K)—ABOVE HI-
    RES PAGE 1": PRINT
160 PRINT "4. 24576 (24K)—ABOVE HI-
    RES PAGE 2": PRINT
170 PRINT "?": GET OPT$: PRINT
    OPT$:OPT = VAL (OPT$)
180 IF OPT <> 0 THEN PRINT

```

```

190 ON OPT GOTO 210,220,230,240
200 PRINT : INPUT "OTHER START
    LOCATION=";LOC$:LOC = VAL
    (LOC$):LOC = INT (LOC / 256) * 256:
    ON LOC <> 0 GOTO 250:END
210 LOC = 2048: GOTO 250
220 LOC = 3072: GOTO 250
230 LOC = 16384: GOTO 250
240 LOC = 24576
250 IF PEEK (103) <> 1 OR PEEK (104)
    <> INT (LOC / 256) OR PEEK (LOC)
    <> 0 THEN POKE 103,1: POKE 104,
    INT (LOC / 256): POKE LOC,0
260 PRINT : PRINT "NEW PROGRAM
    START LOCATION = ";LOC

```

To use this program to select a location for just one other Basic program, run it, select the appropriate location, and load (or type in) your program. If you're using the program for this purpose, you may want to add this line:

```
270 NEW
```

If you want to put more than one program in memory at once and use this program as a menu to select from among the others, first load and run this program. Then select a location from the menu. Type *new* and load your program.

Now, before you run the program, find the end statement and replace it with *poke 103, 1 : poke 104, 8 : poke 2048, 0 : run*. This will make the computer go back to the menu. You can follow this procedure with several programs, provided you give them all enough space to move around in. Putting them too close together could produce what the folks at Apple are fond of calling "unpredictable results."

Before we sign off, there are a few problems with December's Basic Solution we'd like to clear up. Line 1800 of the *Poker* program should read:

```
1800 DATA "D ","C ","H ","S "
```

And line 1940 should read:

```
1940 HTAB HT: PRINT "! ";SU$(SUIT); " !"
```

If you have any other problems, try taking out line 40. This will allow normal error messages to be displayed.

Finally, Jeffery Jacobs of Canton, Ohio, has pointed out that the program doesn't handle royal straight flushes correctly. He sent us these new lines to correct it.

```

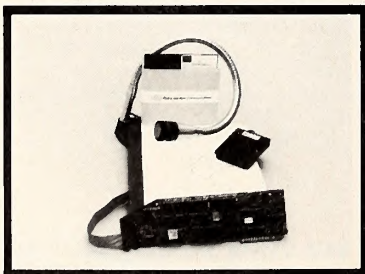
1190 IF Q2 = 5 THEN STRAIGHT = 1:HI
    = Q + 4
1225 IF HI <> 13 THEN 1230
1227 VTAB 1: HTAB 1: PRINT "ROYAL
    FLUSH": WIN = 500 * BE: RETURN

```

Thanks to Ken and to Jeff, and to them and the rest of you, happy programming. □

Voice Machine Communications Inc.

VOICE INPUT MODULE for Apple II®



DESCRIPTION

The VIM converts spoken words to commands or data for your application programs. The Voice Input Module has unexcelled spoken word recognition accuracy at an unmatched price.



For ordering or information contact:
VOICE MACHINE COMMUNICATIONS, INC.
10522 Covington Circle, Villa Park, CA 92667
Phone (714) 639-6150

FEATURES

- No application programming necessary
- Near perfect recognition 98%+
- Unlimited vocabulary using eighty word/phrase subsets
- Recognizes anybody's voice
- Multi-lingual recognition
- Allows simultaneous input of voice and keyboard

APPLICATIONS

The VIM is designed to add voice input to ANY existing Apple II application:

- Word Processing
- Data Input and Retrieval
- Education
- Business
- Graphics
- Industrial Automation
- Programming
- Measurement, Inspection and Testing
- Control Systems
- Games and Entertainment
- Aid for Handicapped

VIM FOR APPLE II CONTAINS:

Voice Input Module 2020C with:

- 16 channel audio spectrum analyzer
- 6803 high speed microcomputer
- 8K Bytes of RAM, 4K Bytes of ROM

Voice Utility Diskette with:

- Vocabulary builder/editor
- Recognition software
- Prompting vocabulary trainer
- Vocabulary tester

Microphone, Users Manual, cables and connectors.

PRICE: \$825.00 Mastercard Visa Accepted Dealer Inquiry Invited.

THE MACHINE

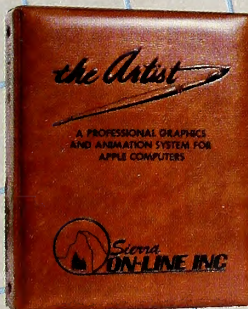


AND THE TOOLS TO MAKE IT WORK



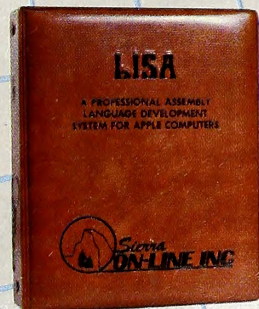
EPF IV

A utilities package that brings word processor convenience - and more - to Applesoft programming. Aids in the entire process of creating and editing, disk space utilization on your finished program disk, file management, faster entry, de-bugging and documentation. Includes a Program Library Subsystem that allows you to concentrate only on the unique aspects of a program. A Data Management System takes the clerical work out of dealing with files. Experience Programming Fun with EPF IV - not simply another Applesoft Editor. \$79.95.



THE ARTIST

A graphics and animation utility for the programmer AND non-programmer alike! Create pictures, shapes and shape tables or even alternate character sets. Animate your finished products using any of six forms of animation (the fastest available). Add "Collision Detection" to create arcade games of professional quality. Use the Zoom Lens to enlarge any portion of the Hi-Res screen. Contains a complete primer on graphics for beginners. Conforms with Assembly and Basic programs. Picasso should have had it so good! \$79.95.



LISA 2.5

Designed for both beginning and advanced programmers. Compiles your programs with a minimum of time and effort. Features include easy-to-learn commands, assembly of over 20,000 lines per minute, over 30 "pseudo" opcodes to turn your Apple into a 16-bit machine. Used in graphics by graphics wizard Mark Pelczarski, Hi-Res adventure author Ken Williams, and arcade author Olaf Lubeck, not to mention Apple inventor Steve Wozniak. The most popular assembler currently available. \$79.95.

All products available through your local computer store or order directly from:

SIERRA ON-LINE, INC.
SIERRA ON-LINE BUILDING
COARSEGOLD, CA 93614
(209) 683-6858

ADD ONE DOLLAR FOR SHIPPING.
VISA • MASTERCARD • CHECK • COD ACCEPTED.



Mr. Dow and Mr. Jones *introduce* Dow Jones Software™



Jones: "Mr. Dow, look what they're selling in that new store down the street: Dow Jones Software. You haven't gotten us into ladies' fashions, have you?"

Dow: "No, Mr. Jones. That's a computer store, and our software products allow investors and business professionals to use a personal computer like this one here to easily manage financial information."

Jones: "But what about our reputation? We've been leaders in serving the business and financial community for over 100 years. Are you sure this new software will be as reliable as The Wall Street Journal and Barron's?"

Dow: "Of course, Jones. Our software is so reliable we back it up with a full-year warranty. People trust Dow Jones Software the same way they trust the Journal. And we have a toll-free Hotline number in case they want expert help."

Jones: "Couldn't that be a lot of phone calls? After all, we've got the Dow Jones Averages to get out every day."

Dow: "Don't worry, Jones. Our software is very easy to use, and we have a fully staffed Customer Service Department to

respond to our dealers and customers."

Jones: "Just what can our software do?"

Dow: "In a nutshell, Jones, with a personal computer, a telephone, a modem and Dow Jones Software, you can easily perform complex analyses on the information available from our information service, Dow Jones News/Retrieval®."

Jones: "People really use our software to make decisions?"

Dow: "Absolutely. Once you've stored the information you want, our software does the rest. For instance, with one Dow Jones Software product you can follow indicators for stocks, sort, rank, screen and set critical points for buying and selling. With another, you can easily construct technical charts. Look at this beautiful graph."

Jones: "You mean all those calculations I've been doing by hand I could do in a fraction of the time with this software? That's great!"

Dow: "It is, Mr. Jones. Just like the Journal, Dow Jones Software is a resource you can bank on!"



Dow Jones Market Analyzer™

A technical analysis product that allows private and professional investors to automatically collect, store and update historical and daily market quotes, and to construct technical analysis charts at the touch of a key.

Dow Jones Market Microscope™

A fundamental analysis product that allows professional money managers to choose and follow indicators for extensive lists of stocks and industry groups, and to sort, rank, screen and set critical points for buying and selling.

Dow Jones Market Manager™

A portfolio management product for private or professional investors who desire immediate access to pricing and financial information, and who need an accounting and control system for their portfolios of securities.

Dow Jones Connector™

A communications product for the business or professional person who wants instant electronic access to news, facts and vital data at the home or office, via personal computer, simple terminal, communicating word processor or teletypewriter.

See your computer dealer
or call

1-800-345-8500 Ext. 48

for a free brochure

(Alaska, Hawaii and foreign,
call 1-215-789-7008 Ext. 48)

DOW JONES SOFTWARE™

...Bank on it.

Buttonwood Apples

BY KEN LANDIS



In identifying potentially profitable investments, two basic types of analysis are used: *fundamental* and *technical*. Fundamentalists use the financial statements of a corporation, general economic indicators, business conditions, and so on to isolate investments that they feel may be profitable. Technicians, or as they are more fondly called on Wall Street, elves, study the movements of securities and their relationships to events in the world outside.

Say, for instance, that a certain security has rapidly dropped twelve points the last three times the unemployment statistic increased one-quarter of a percent or more. Whereas a fundamentalist might see inherent strength within the stock and stay long, a technician might identify the relationship between the two events and sell short. Technicians look also at a security's present condition and at how that relates to its past. Moving averages and oscillators are among the tools used to quantify these kinds of relationships.

The More the Harrier. Technical analysis requires the manipulation and charting of large amounts of data. It is time consuming and, to be effective, must be done frequently. Computerization of the calculations and charting required has helped technicians do more in less time, thereby increasing their productivity and (one would hope!) the value of their portfolios.

Technical charting ability, together with a portfolio accounting module and a communications module for retrieving news, views, and quotes from remote databases, is a good summary of the computer power a technician can put to use. This combination is also an accurate description of the *Market Analyst* package.

Market Analyst, Anidata (613 Jaeger Court, Sicklerville, NJ 08081; 609-228-3034). \$495.

Backup policy: Two copies supplied with purchase (both sides of the disk); \$9.95 for each additional backup; \$25 per update.

System requirements: 16K RAM card (in slot 0); one disk drive. Recommended: Graphics-compatible printer (slot 1); Micromodem II or Apple Communications Card (slot 2).

The *Market Analyst* package was written by Ed Gillott, a gentleman and a devout technician. Gillott is always standing by to answer questions concerning his package and to talk about the markets, money, or whatever.

Some people may find fault with this program because it requires a 16K RAM card. The author reasoned that a 16K RAM card is a smaller investment than a mandatory second disk drive. This is a good point. There aren't many serious Apple-equipped investors who don't have two disk drives and a 16K RAM card, but the novice who may just be starting with an Apple will appreciate being able to run a sophisticated analysis package with only one disk drive. This arrangement saves an investor money—money that might well be put into the market!

Market Analyst consists of three main programs: the portfolio management module, the technical analyst module, and the news, quotes, and view module. Let's look first at the technical analyst module.

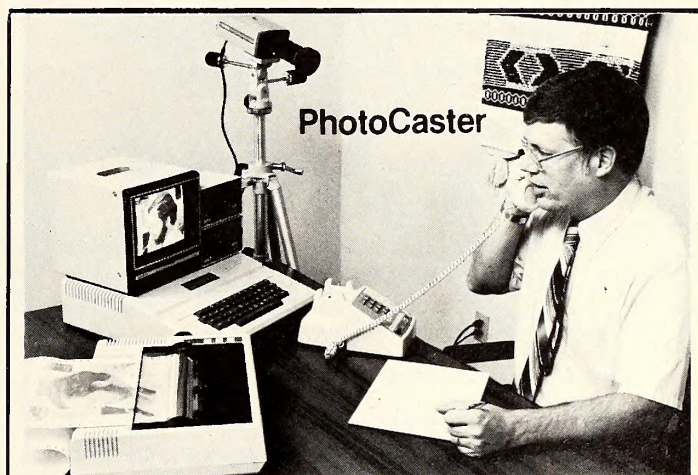
Talk of the Technical Town. The technical analyst is the major reason for purchasing the program. It gives investors the tools required to judge an investment based on its technical merits. To use the package ef-

fectively, you must be a proficient technician. *Market Analyst* does not claim that it will teach you to do technical analysis, and it won't. What it will do is help novice or advanced technicians with their investment studies.

The graphic display of the technical analyst splits the Apple's screen horizontally into two sections. The upper half displays historical stock quotations in standard bar charts. The lower half of the display is reserved for the various technical studies built into the package and for user-supplied formulas. The results of the calculations are displayed in hi-res graphics.

The technical calculations included in the lower plot analysis are moving average, on-balance-volume (the gospel according to Granville), accumulation/distribution, various price and volume formats, positive and negative volume indicators, and trend/support/resistance lines.

It's also possible to input algebraic relationships and have the program chart them. Throughout the documentation, this feature is referred to as *user-customized studies*.



PhotoCaster... a new feature packed system to take, process, store, print, send and receive color and black-and-white photos with your Apple II computer.

PC-100 (disk software, I/O board, manual, demo tape) \$499.95

PC-101 (above plus Panasonic TV camera, RGB filter accessory) \$749.95

Write or call for details

Visa and Mastercard orders accepted. Shipping charges and applicable California sales tax will be added.

Apple II TM Apple Computer, Inc.
PhotoCaster TM COMMSOFT, Inc.

COMMSOFT

2452 Embarcadero Way
Palo Alto, CA 94303

(415) 493-2184

You can also instruct the computer to plot the information on either standard or exponential graphs, which are automatically aligned by date with the upper price bar chart.

Multiple charts can be displayed at the same time on the lower plot screen. This helps you identify critical points in the study, such as the crosspoints of various oscillators, that may indicate a significant price movement.

Within the technical analyst, you can choose interactive analysis or auto-analysis; auto-analysis creates complex charts automatically.

As soon as you've loaded a data file in the interactive mode, the high-low-close bar chart for the most recent six months of trading will be displayed on the upper portion of the split screen. Then, from a menu on the lower screen, you can mess with the chart. You can compress it, expand it, zoom in on it, look at moving averages, get rid of parts you don't want, plot trend/support/resistance lines, or display numbers. (See figure 1.)

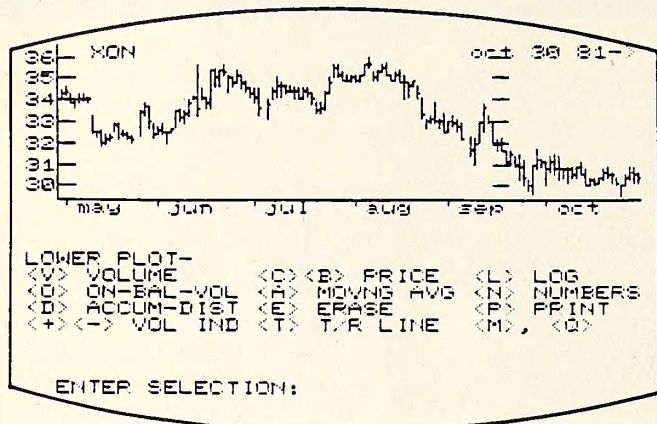


Figure 1.

The compress feature permits you to work with a display larger than the latest 131 data records, or six months of daily trading activity. Com-

pressing changes the display to a year's worth of data in two-day intervals. Compressing further can show thirty months' data in weekly increments.

The compress feature even considers the stock historian. If your data is stored weekly instead of daily, compressing can display monthly information for as much as eleven years; and, if your data is monthly, you can look at sixty years' worth at one time.

The expand feature reverses the process of compressing. It expands the chart back to its original scale and range.

The zoom feature lets you zoom in on part of the chart in enlarged form. It doubles the horizontal scale of the right half of the display, erasing the left half and highlighting the most recent data.

Moving average calculations are plotted for a time period you select. The period must cover at least two chart points but must not exceed the time period displayed on the chart. If you are working with a chart that you've compressed, the program automatically adjusts for the level of compression.

The erase feature erases the last moving average drawn without disturbing the balance of the screen.

In the numbers mode, the bottom sixth of the upper screen becomes a numeric chart displaying the volume-high-low-close of your chosen point on the chart.

The Voluminous Plot Thickens. When you're satisfied with the display on the upper screen, you're ready to work with the lower screen, where a majority of the technical analysis and plotting of the upper screen chart takes place. Here you can look at a histogram of volume; at center (zero) axis charts of on-balance volume (OBV) and accumulation/distribution; at normal axis charts of the PVI and NVI (positive volume indicator, which highlights price movements on trading days with higher trading volume than on the previous day, and at its opposite, the negative volume indicator); at a closing price line plot; at a high-low price bar chart; and at a moving average plot. (See figure 2.)

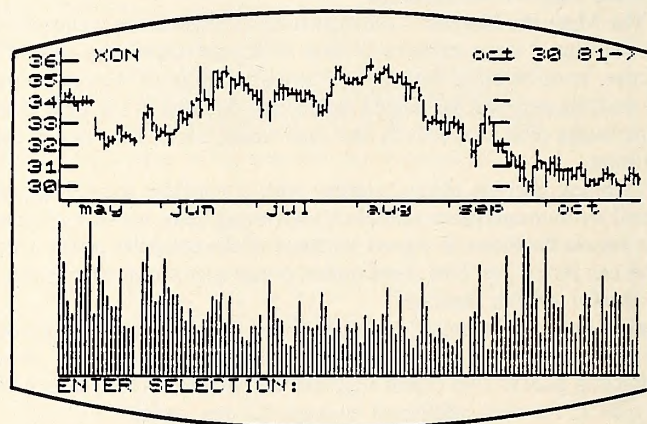


Figure 2.

A moving average of the last plot, calculated and plotted over a user-supplied period, can be done. These comparisons require a previous study or plot to have been done on the lower half of the screen. Even though the previous chart has been erased, the data is stored in memory. The memory buffer will always hold the information from the previous chart.

Residential Basics. *Market Analyst* also has the ability to plot closing price data from files other than the basic file. Basic file data is the data resident in the upper plot, which was initially loaded into the lower plotting area. These plots are useful for making inter-issue comparisons or for comparing the investment to industry averages. To prevent misinterpretation of the data, the program only allows files with similar periodicity (daily, weekly, or whatever) and matching dates to be displayed.

The user-defined formula option allows you to input your own formulas to *Market Analyst*. Three formulas can be stored on disk at one time, and you can enter and work with one more formula, but the fourth one cannot be saved. Of course, you can edit and replace the stored formulas too.

The formula specifications are well defined and explained in the

Basic Extension for the Apple III™

If you program in Business Basic,
you shouldn't be without it.

- High speed disk routines, 10 times faster than Basic, up to 30% savings in disk space.
- Access to any block on a disk.
- Change file types.
- Array manipulation, insert - delete elements, move sections of arrays, search arrays.
- Character Set Editor, create or edit your own character sets.
- Disk Block Editor, view or edit any block on a disk.
- Reset protection.
- And more, all for only \$95.

Foxware Products - (801) 364-0394
165 West Mead Ave., Salt Lake City, Ut. 84101

Apple III is a registered trademark of Apple Computer, Inc.

documentation. Standard operators are used for addition, subtraction, multiplication, and division. The ampersand is used for absolute value calculations, and time offset calculations are accomplished using a number within brackets, such as $<-1>$ for today minus one (yesterday). The operands to be used within the user-defined algebraic equations are logical, easy to use, and clearly documented.

The equations, which may not exceed sixty characters, are strictly evaluated from left to right. You must use parentheses wherever they're called for to ensure proper mathematical evaluation of the expression.

And here's a rare treat: Should you have trouble figuring out how to represent a calculation algebraically, the author of *Market Analyst* is willing to help you figure it out!

You can toggle the plots between linear and semi-log scales. Log functions are undefined for a value of zero. Any plots having a zero point in their data set are plotted on a linear scale, even in the log mode. Volume charts are the exception to this rule. A special routine is activated for plotting volume in log mode. Volume data is plotted on a log chart, even though zero data may exist. (See figure 3.)

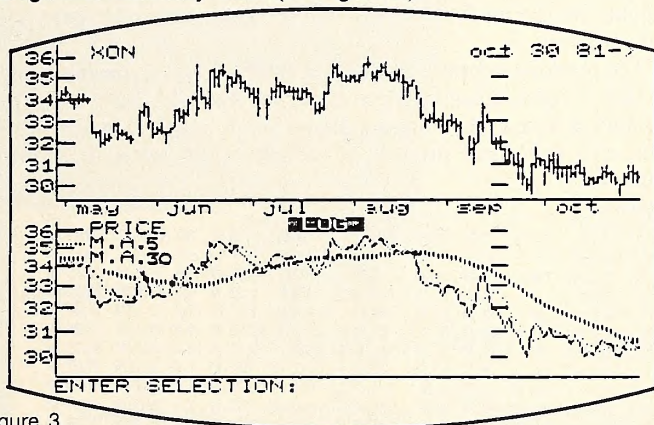


Figure 3.

Assuming you have a printer set up for graphics, you can produce hard-copy printouts of the plots currently displayed on the upper and lower plot screens at any time. *Market Analyst* is set up for printers connected by the Grappler and Microbuffer interfaces and for the Apple Silentype printer.

The auto-analyze feature stores the keystrokes used to create a complex chart and repeats them as you have directed.

The two parts of auto-analyze are a program creation mode and a chart mode. In the chart part, all quote files on a data disk are charted automatically according to the steps you've prescribed in the program creation mode.

In truth, the program does all the programming in the program creation mode, so don't be dismayed. You merely choose which keystrokes—up to twenty-nine—should be saved in the auto-analyze keystroke file. The keystrokes you choose are the very ones you use in the interactive mode. The program shows the file-select menu, from which you select a file so *Market Analyst* has sample data to build the auto-analyze file on. All of the regular analysis functions are available with the exception of trend lines and numbers, which require real-time interaction.

Once you've chosen all the features to be activated within the auto-analyze mode, you must decide such things as what decision criteria should be used, when the program should pause, and what conditions have to be met before a particular chart can be displayed. During a pause, the charting stops, allowing you to interact through any normal keyboard function. The system won't begin processing the remaining commands in the auto-analyze file until you let it know you're ready to go on.

When the program is in the auto-analyze mode, status indicators show what phase you're in.

The auto-analyze feature is used to identify charts that fit your predetermined decision criteria. An example given in the documentation is:

Plot the volume and pause for every stock that has appreciated 10 percent

STOCK MARKET INVESTORS: Calling this toll-free number can be the best "investment" you'll ever make.

1-800-392-2669

Discover the Market Maverick—a revolutionary stock market program for the Apple II* and IBM-PC** computers—with a combination of money making/money saving features that you won't find in any other program at any price!

Ours is a decision-making tool. Ours is based on a model with 9 years of proven performance. Ours is used by professional investors. Ours has the longest published Wall Street track record of any model of its type. And ours is fully supported statistically!

With the Maverick, you not only pinpoint stocks with the greatest upside potential, but you can avoid those that are over-extended and get out before price reversals.

Record of success.

For 9 years ending 11/30/82, the top 10% of stocks which the model identified as most attractive rose 222.4% and the least attractive 10% fell 11.2%! Two years ago, 14 of the 20 most overvalued stocks were in the

energy sector. By 7/30/82, they had declined 53%. Meanwhile, the 20 most undervalued stocks (J.C. Penney, Philip Morris, McDonald's, etc.) appreciated 4.3%.

In the recent bull market, from 7/82 to 11/82, the most attractive 10%, led by MCI, Tandem, NME, and Mitel, gained 45% while the DJIA rose only 29%.

What's more, the Maverick foresaw the recent downturn of technology stocks: Tandem, M/A Com, Scientific Atlanta, and Tandy. And the upturn of IBM, GE and General Foods.

Call us toll-free.

No operators, your call comes direct to FSI people who have the answers. Ask about system requirements. Ask about our \$25 Home Demo Package (which we apply to the \$250.00 purchase price when you buy). Ask about some of the successes that users tell us about. You'll never really know how incredible the Market Maverick is until you try it!

FINANCIAL SOFTWARE, INC.

11401 Westridge Circle, Chardon OH 44024

For our free no-obligation brochure or more information, call (from outside Ohio)

1-800-392-2669

In Ohio, call 216-338-6811

*Apple II is a trademark of Apple Computer, Inc. **IBM-PC is a trademark of IBM.

in the last three months. On the lower plot, plot the $\langle C \rangle$ Close; enter the conditional parameter ' $>11/10^6c<-60>$ ' to select those charts whose last Close is 110% (11/10) of the Close of the sixty days prior; enter $\langle V \rangle$, $\langle \text{CTRL} - P \rangle$ for processing if the condition is met.

Historically Quotable Quotes. To store and manipulate all this data, *Market Analyst* has a quotes-file maintenance function. This module is used to create and maintain the historical price/volume data files for use by the technical analyst.

Each disk holds up to sixty-seven individual quote files. Each file may have from seven months to five years of daily data, or data for a proportionately longer time span if the data is weekly or monthly. The maximum number of files on the disk is determined by the amount of data stored in the individual files; the more information you store per file, the fewer files you can have on one disk.

The most important feature of this module is its ability to retrieve stock quote information via a modem from CompuServe or the Warner Computer Systems Database.

To use a modem, you're required to store some information in the *Market Analyst's* configuration file. *Market Analyst* needs to know what modem you're using, your CompuServe user identification and password, and, optionally, five telephone numbers you'd like it to remember. The CompuServe information service uses page numbers to identify its various features. Should these page numbers ever change, you can change them also in the *Market Analyst's* internal fetch routine, preventing the routine from becoming outdated.

Also in this phase, you can choose whether estimated liquidating commissions should be deducted from the portfolio profits, whether the zoom default setting should be on or off, and what printer specifications you want the program to provide for.

The teleprocessing update section has sophisticated data-checking routines. If *Market Analyst* is receiving bad or garbled data transmissions from the remote database, it stops the data transfer automatically. Three short beeps sound to alert you, and *Market Analyst* attempts to restart the data transfer from the last good data received.

During the teleprocessing fetch, you may override the commands be-

ing issued to the remote database simply by pressing the appropriate keys on the Apple. The program author warns that you must be quick. There is, however, a time-delayed procedure in the program to let you change the ending date of the data set being fetched. If changed, the date is used for all the data files being updated.

The teleprocessing module for Warner is similar. *Market Analyst's* data-checking feature is also activated. During any data fetch, *Market Analyst* will attempt to correct data transmission errors three times before hanging up.

Through an edit feature, *Market Analyst* allows you to adjust stock prices for splits automatically. This is an important feature. Without a subsequent adjustment in the stock's historical prices, a split can severely affect the technical interpretation of the data.

Revealing Secret Identities. Once you've identified securities that you wish to buy or sell, you can use the portfolio manager module to help with your portfolio.

The portfolio manager keeps track of open and closed positions. The open position file reflects your current holdings; the closed or liquidated position file is used for analyzing the tax implications of your current year's activity.

The portfolio information that you enter is stored in memory and on the disk in eighty-column format. Since the Apple II displays only forty columns at a time, the program allows you to toggle between the left-hand and right-hand displays. A sample report screen is shown in figure 4.

NAME	QTY	TYP	COST	PRICE	PROFIT	T	NAME	L.V.ALU	YLD	MM/DD/YY	COMM	AT
CITZ SH	100	L	8.00	9.25	61.40		CITZ S	892.09	4.3	8/25/80	30.61	DW
EOXON	150	L	32.25	35.13	263.24	S	EOXON	5182.95	8.5	8/30/81	82.21	DW
I 8 M	30	L	62.50	59.75	-203.14	S	I 8 M	1732.86	5.8	7/ 1/79	61.68	SD
I 8 M	40	L	55.50	59.75	22.81	S	I 8 M	2315.05	5.8	3/16/81	72.64	DW
IND V 8	200	L	17.50	21.00	552.42	S	IND V	4149.16	10.5	6/10/81	46.74	DW
OC PET	200	L	21.50	25.50	662.63	S	OC PET	5802.05	7.8	3/18/79	89.42	TH
R C A	1500	OP	1.25	2.38	1574.61	S	R C A	3497.09	0.0	11/28/81	47.45	TH
TRNSNET	200	L	3.50	3.50	-60.00	S	TRNSNE	670.00	0.0	7/13/81	30.00	TH
WEST EL	2500	OC	0.37	0.63	561.13	S	WEST E	1526.51	0.0	11/ 2/81	27.88	DW
					3435.21			24967.76	6.2%	ON	25581.25	

Figure 4.

From the portfolio manager, you can elect to see a detailed display of the open positions with totals for profit and loss, liquid value, and portfolio yield on the total market value; or an averaged portfolio display, similar to the detailed display but with only one line allotted for any group of like positions in an issue. The quantity displayed is the total for that position, and the price is the weighted average of all prices in that group.

You can also update prices in the portfolio files and close out a position, moving the data to a history file. You can display the securities stored in the closed history file, long and short term profits, and total profits; delete records in the history file; or delete an entire history file, usually done at year-end to initialize the program for the coming year's tax records.

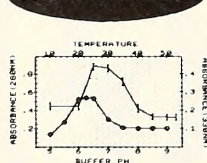
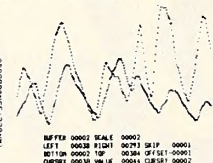
The portfolio manager has its own built-in editing, formatting, reporting, and printing facilities and, like this entire package, is extremely friendly and well protected against user errors that might cause loss of information.

The news, views, and quotes module is an easy to use communications program that gains access to a remote database and stores up to thirty pages of text in a memory buffer. Then you can sign off and review the transmitted information without incurring the cost of staying on-line for the length of time it takes to digest thirty pages. In addition, the information can be printed out.

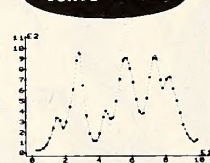
Three Ways of the Analyst. *Market Analyst* is an integrated software package. It provides the three essential tools needed for technical analysis and investing: analysis and charting, portfolio accounting, and a communications capability to retrieve quotes and market news. The program is well written and reflects the effort of the author to produce a high quality software package. Ed Gillott has shown the highest commitment to his product and a willingness to provide complete, professional support. This package is recommended without reservation for consideration and use by anyone involved with technical analysis.

Powerful Lab Graphics For Your Apple II +[®] Computer

SCIENTIFIC PLOTTER

**VIDICHART™**

CURVE FITTER



SCIENTIFIC PLOTTER

Draws professional-looking *graphs of your data*. EASIER, FASTER, NEATER and more ACCURATE than handplotting. *You choose data format, length and position of axes, 20 symbols, error bars, labels anywhere in 4 orientations, etc.* Includes 5 DEMOS on disk with 30-PAGE MANUAL.

CURVE FITTER

Selects the **best curve to fit your data**. SCALE, TRANSFORM, AVERAGE, SMOOTH, INTERPOLATE (3 types), LEAST SQUARES FIT (3 types), EVALUATE UNKNOWNNS from fitted curve. Includes 5 DEMOS on disk with 33-PAGE MANUAL

MANUAL.
VIDICHART™

NEW tools for *lab data management*. FAST plots of 4 data sets with SCROLLING in 4 directions, ZOOM scaling on X and Y axes, 2 types of graphic CURSORS and on-screen STATUS REPORT. PLOTS A/D INPUT *while sampling*. ADD, SUBTRACT, MULTIPLY, DIVIDE, INTEGRATE, DIFFERENTIATE, AVERAGE or NORMALIZE data sets with SIMPLE COMMANDS. *Ideal for spectra, chromatograms, rate curves, etc.* Includes SAMPLE DATA on disk with 28-PAGE MANUAL.

SPECIAL! All 3 programs on one disk, only \$120. Since each program uses the same data format on disk, data may be shared.

BUY THESE PROGRAMS AT YOUR LOCAL DEALER OR ORDER DIRECT. For more information, ask for FREE brochure or send \$5 for any manual (\$12 for all 3), deductible with purchase. Add \$1.50 shipping on all orders. For fastest service, call in your VISA or Master Card order.

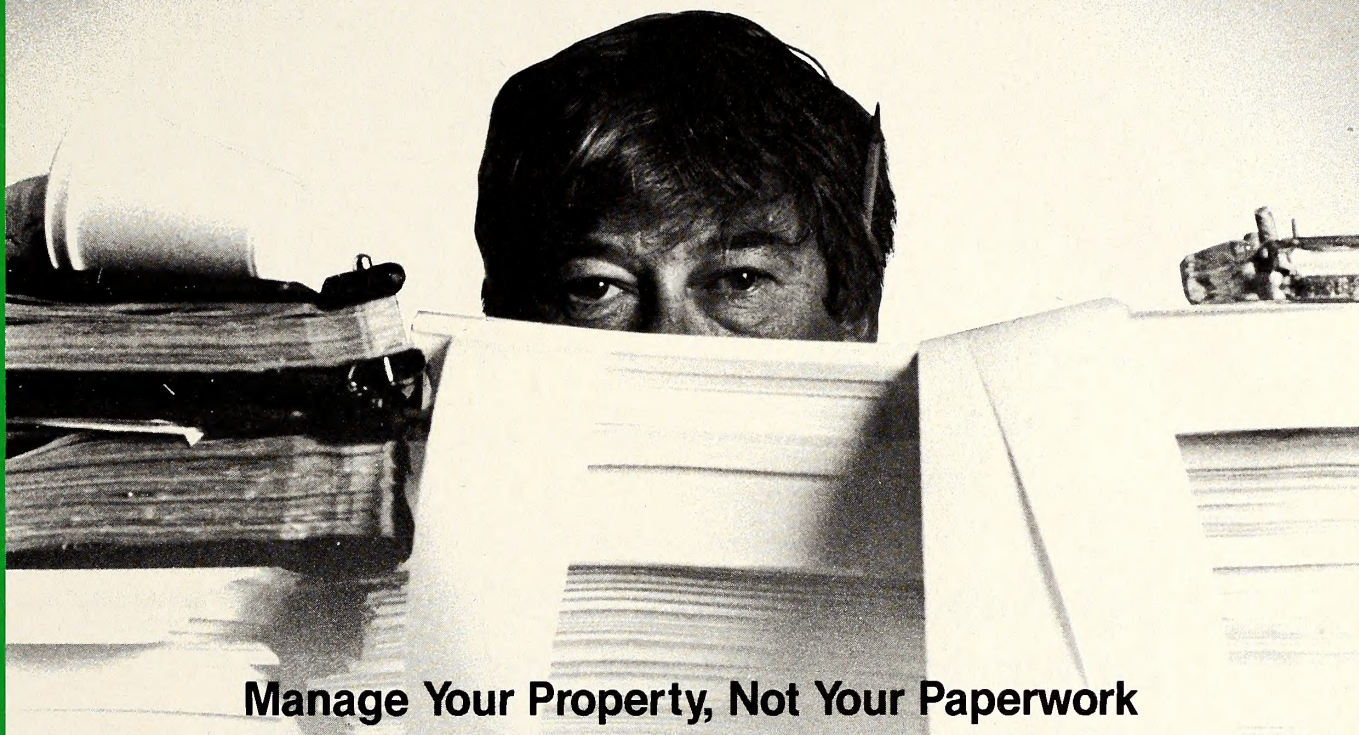


INTERACTIVE MICROWARE, INC.
P.O. Box 771, Dept. SK State College, PA 16801
CALL (814) 238-8294 for IMMEDIATE ACTION

* Trademark of Apple Computer, Inc.

The Landlord®

Property Management Software

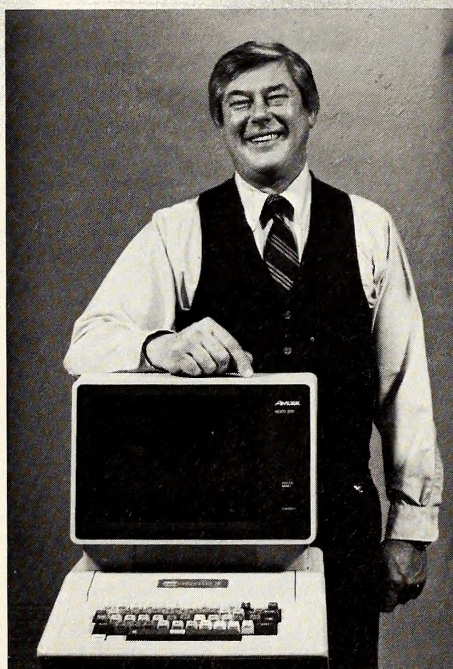


Manage Your Property, Not Your Paperwork

Want to get out from under the paper pile? Want up-to-the-minute financial and rental information available at the touch of a finger? Meet The Landlord. With The Landlord you can do all those clerical and accounting tasks you've been doing by hand easier, faster and more accurately.

The Landlord helps you keep track of nagging details:

- Print income statements per property and owner
- Generate lease expiration lists
- Print rental statements
- Keep track of expenses per property
- Print Payables checks
- Record changes and payments for each renter
- Produce tax analysis reports for each property—adjusted to your personal situation
- Print current and upcoming vacancy lists



Now available on the Apple II® and the IBM Personal Computer, The Landlord will soon be available for CP/M® systems.

Manage any monthly income property at the touch of a finger:

- Apartments
- Offices
- Shopping Centers
- Mini-Storage Units
- Aircraft Hangars
- Marinas
- Condominiums
- Single-Family Homes
- Duplexes
- Trailer Parks

Call Systems Plus for the name of your local dealer.

Systems Plus Inc.
1120 San Antonio Road
Palo Alto, CA 94303
415 / 969-7047
TWX: 910 379-5060



CONGRATULATIONS.

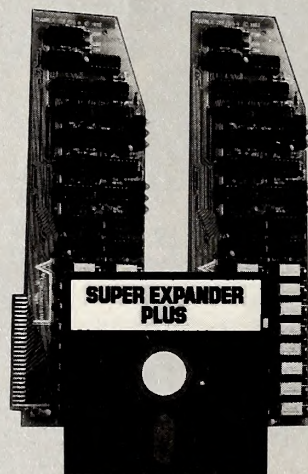
YOUR VISICALC™ JUST DOUBLED IN VALUE.

**New Super Expander Plus™ pre-boot
for Ramex-128™ board upgrades any
Apple II™ 16-sector VisiCalc™ to look
like the Advanced Version.**

SUPER EXPANDER PLUS keeps all your existing VisiCalc facilities, and adds variable column width, global formatting of numbers, negative numbers in brackets, password protection, new format commands, tabbed fields, the works. It even supports an 80-column card if one is present.

If 136K is enough, you can get all these features with just one Ramex-128 board. But SUPER EXPANDER PLUS supports **two** Ramex-128K cards to give you an incredible 255K VisiCalc File, and dumps the whole model back and forth to floppies in **less than 40 seconds**.

There's simply **no** other memory-expansion/software combination



SUPER EXPANDER PLUS™

that even comes close. All the others give you less memory, take longer to load and save (as much as fifteen minutes longer), and cost more for what you get. You've got to see it to believe it. Quick! Call your dealer.

**Ramex-128 card, just \$499.
SUPER EXPANDER PLUS,
just \$125.**


OMEGA MICROWARE, INC.

222 SO. RIVERSIDE PLAZA
CHICAGO, IL 60606
312-648-4844

MasterCard and Visa holders order
toll-free 1-800-835-2246

Following our long-established Omega MicroWare policy, present Super Expander-40 and -80 owners may upgrade for the price difference only. Phone our office for details.

Apple is a registered trademark of Apple Computer, Inc. VisiCalc is a registered trademark of VisiCorp, Inc. Super Expander Plus, Ramex-128, and Omega MicroWare are trademarks of Omega MicroWare, Inc.

© 1983 Omega MicroWare, Inc.



by

T a y l o r P o h l m a n

Exploring Business Basic, Part 17

An Immediate Apology. If, like a lot of people, you looked at the program listing in this article before reading the text, you're probably wondering, "Where is that hi-res game he promised last time? This giant mess can't be it!" Right again, buckaroo. The game that was promised will be delivered, but next month. A bigger issue, related to hi-res games, will be covered this month as a precursor (heh, heh) to that article.

To tell the truth, the original plan was to create a little shape generator and editor to do the graphics animation characters. Well, the shape editor grew and grew and threatened to overwhelm the entire article. Shortly after threatening to do so, it did. Forthwith, this month's article presents a hi-res character set and a shape and font editor with some really nice features. Next month we'll use the editor to create creatures to inhabit our game. Also, because the program is so large, the usual chatty narrative will be somewhat terse. And now, on with it!

An Immediate Digression. Having made all those imposing statements about terseness (tersity?), let's digress for a moment. Several new products have been introduced on the Apple III that deserve notice. First is a parallel printer interface from Interactive Structures. What distinguishes this card is the software, which is really complete. It supports many different printers, including Apple's new Dot-Matrix Printer, both in emulation mode and with SOS drivers. The driver can print with a variety of options, and, if your printer has a graphics print option, the driver can even use the current screen font for printing! In addition, an invokable module is supplied, usable from Basic and Pascal, which permits graphics screen dumps with lots of options. Altogether, a nice piece of work.

The next two products are floppy disk drives for the Apple III. Yes, Virginia, there are high-density floppies! Apple introduced their new UniFile and DuoFile at Comdex, and they should be available soon. They feature 860K per disk at a very reasonable price. Also on the

market now is the MicroSci A143, a 560K disk that daisy-chains along with the standard drives. This disk has less storage, but it also has the advantage of not requiring a slot. Since both disks come with SOS drivers, they are completely compatible with all your other software. Go SOS!

And Now, On with the Show. First, we'll look at the general operation of the shape editor, using line number ranges to describe large operations. Then, some of the routines will be examined in detail to clarify points of possible confusion and to indicate which routines could be adapted for other purposes.

General Operation. Apple III hi-res shapes and characters are drawn on the screen using a procedure in the Bgraf invokable module called Drawimage. This actually utilizes the Drawblock capability of the .Grafix driver. Unfortunately, knowing all this, and even reading all the documentation, doesn't make it completely clear. The program that follows should help by illustrating lots of useful subroutines that perform these functions.

The program operates by creating a work area on the screen that allows you to look at and change data blocks used by Drawimage. These data blocks consist of integer arrays that Drawblock interprets as bits to be drawn on the screen. From now on, the word *bit* will mean a piece of data in an array, and the word *pixel* will mean the representation of that bit as a dot on the screen. Obviously, the different graphics modes have different looking pixels, although the bit in the array is the same. For now, we won't worry about color, since that is not a function of the bit arrays, but rather of the pen color assigned at the time the bits are drawn.

Another important feature of the editor is that it maintains separate windows on the screen for each video mode. This allows you to see the shape in all the modes at once as it's being created. Sometimes a shape that looks good in one mode looks terrible in another, because of the different proportions. Enough theory, let's look at the code!

Getting a Bit Under Control. After setting

up arrays in lines 10 through 15, variable and table initialization is done in lines 4000 through 4500. The program uses several arrays as work areas and holding areas for data, and others for fast look-up of information for performance. Work% is an array that holds the bit patterns currently available to be modified. These can come from a character set (char%), a shape definition (shape%) or an Apple III system font (cset%). The most important tables used for look-up are shex%, bits%, and flip.

Shex% is defined in lines 4000 through 4015 and contains the bit representations of all sixteen hex digits in four modes: two high, four wide; one high, four wide; one high, two wide; and one high, one wide. These modes correspond to character bit patterns for the work area, 140 by 192 mode, 280 by 192 mode, and 560 by 192 mode respectively. This is necessary since we will be using the 560 by 192 screen for all editing functions, but we'll want to look at the characters and shapes as they would appear in the other modes.

Bits% is a table that has four entries for each hex digit (one for each bit) and allows quick determination if a particular bit is on or off in a given hex number.

Flip contains 256 entries, each one corresponding to a byte with its bits reversed end for end. For example, consider the number 75. In hex, it would be \$4B; in binary, 01001011. If we were to flip the bits exactly, the result would be 11010010, hex \$D2, or decimal 210. All this would be extremely unimportant if it were not for the fact that the character images used by the Apple III system fonts and the images used by the Bgraf invokable module are exactly reversed. Therefore, to move back and forth between the two requires some way of reversing the sets. Thus the table flips. By looking up the seventy-fifth table entry, the program will find the value 210 and make the substitution. Line 4060 builds this array from a smaller array called lookup that consists of flipped hex digits.

Once initialization is done, lines 30 through 50 do some further setup, and the program proceeds to build the graphics screen for editing. If

you're wondering whether the whole program is worth entering, try typing in lines 5 through 200, just to get a look at the screen. It'll make a lot more sense out of the discussion to follow. Notice that line 100 refers to the subroutine at line 600, which creates the four windows referred to earlier. This routine is also used later to clear the windows quickly.

Once the screen is initialized, lines 210 through 235 get the command and dispatch to the proper routine for processing. Note that the actual input is handled in a subroutine at line 3000. This routine, along with the error routine at line 3070 and the message routine at line 3100, handles character input and output to the graphics screen. Remember, the primary action is on the graphics screen, so we want to avoid flipping back and forth between graphic and text screens. You could use this routine in any program that wants to accept text input on the graphics screen.

A Routine a Day. Rather than describe the various functions one at a time, it's more instructive to look at some in detail and give a general overview of the rest. One command that shows off most of the features of the program is Load, selected as item 2 on the menu. Load is handled by the routine at 1400.

Getting Loaded in Hi-Res. First the routine prompts for what kind of file to load. Shape and character set files are unique to this program, but the font file must be treated specially, since Basic cannot directly open a system font file. Note the use of the INSTR function at

line 1410 to determine the value of the variable choice. There are two spaces in front of the "Ss" and one space between "Ss," "Cc," and "Ff." When divided by three and truncated (INT), the result is 0, 1, 2, or 3. This is a handy technique to handle multiple-choice options in either upper or lower case.

The error flag is set in line 1430 to handle any errors in dealing with the files, and then, unless it's a font file, the file is opened in line 1435. If the choice is a font file, the Getfont invokable procedure is used to load it into memory, and the subroutine at line 3950 is called to flip the font to the graphics mode. If the choice is a shape or character file, then information about the data is read in line 1450 from the first record. Filtyp is the type code used to save the file, ch is character height, cw is character width, and sl is the valid length of the shape definition in words (0 to 7). Not all these values will have meaning, depending on the value of filtyp. If everything is okay, then the Filread invokable procedure is called (from the Request.Inv module) to read in the array from the file. The actual size of the file as read, ret%, is checked against the expected size, size%(filtyp); if everything checks out, then the subroutine at line 3600 is called to display the results of the load.

The subroutine at line 3600 does most of the work of displaying the bit images on the screen as various sized pixels. First, depending on the type of image to be displayed (shape, character set, or font), it loads a section of the appropriate array into the work area using the routines in lines 3700 through 3940. If the choice is a shape, it is directly transferred to the work area, since shape definitions are arbitrarily defined to be a maximum of 128 pixels wide by 16 pixels high. In the case of character set and font definitions, the routine at line 3800 prompts for a starting character number to display in the work area. Normally character definitions are each eight pixels wide, and fonts are always eight pixels wide. Although it is possible to define a larger character cell size, for the purposes of this program fonts will be transferred to the work area on eight-pixel boundaries and character sets will be transferred on even eight-pixel boundaries. This simplifies things considerably, since the data is stored in integer (sixteen-bit) arrays. Lines 3815 through 3830 determine the starting location in the char% array to begin the transfer and calculate sl, the shape length, which is the number of array elements (maximum eight elements or 128 bits) to display in the work area.

As you can see, the storage format of shapes and character set definitions is similar. Basically, the first index of the array represents the bits in a given row, and the second index represents the row number. Things are considerably different in the font definition, however, as shown in the routine at line 3900. The Getfont procedure reads the font definition into a one-dimensional array that is decoded in lines 3915 to 3935. You can think of the font definition as a set of eight bytes for each character, one byte for each character row, arranged one after another. Every eight bytes (four integer elements),

a new character begins. The requirements of the Drawimage procedure are that each row byte be in a separate row element, and that each row element (an integer) contain the two row bytes of two adjacent characters. Whew! No wonder a lot of these programs haven't been written! Anyway, trust it, it works.

See It All. After all that messing around, we now have the proper information in the work% array and can draw the images on the screen with the routines at lines 3605 through 3690. After clearing all the windows, and setting up the variables (rs—starting row to display, re—ending row to display, bw—beginning word of column, ew—ending word of column), we are ready to draw in each window. Line 3610 gives the starting position of the window in xdot and ydot and then defines where in the shex% array the drawing of the pixel definitions will take place. Rows zero and one of shex% are pixel definitions of hex digits in four wide, two high format, the format for the work area display. The subroutine at line 3670 then proceeds through the work% array, drawing from the definitions in shex%. Note that line 3625 performs the Drawimage procedure directly, since the window at 7, 117 is for 560 by 192 mode, which is the current screen mode and can thus be drawn directly. The drawing proceeds with list 3630 through 3635, which sets up the 280 by 192 mode (two wide, one high), and finally lines 3640 through 3645, the 140 by 192 mode (four wide, one high); the display is now complete.

Although this information is useful, it is by no means complete. A thorough reading of Appendix I of the Basic manual on the Bgraf invokable and the *Standard Device Drivers Manual* section on Grafix is strongly recommended.

This program has also been somewhat simplified by limiting the shape and character size definitions in size. In actual practice, Drawimage can be used to draw shapes or characters actually larger than the entire graphics screen! An interesting challenge is to modify this routine to handle larger shape and character definitions, treating the work area as a window, as is done to a limited extent with the character set and font definitions.

Putting the Bits and Bytes to Bed. A quick look at the save function is worthwhile, especially now that you are familiar with the internal format of the information. The save routine is found at lines 1100 through 1195 and is relatively straightforward except for lines 1170 through 1180. In line 1170 a check is made for file type 3, the font file. Font files are saved without accompanying information, since the format is fixed. This also allows you to alter the file type on disk to font type and load the font into the standard system character set. The Pascal filer will allow this, and there is a new invokable from Foxware that makes it easy to do from Basic. In addition, the Loadfont procedure will allow you to use Download.Inv for the same purpose.

Line 1175 then goes to a subroutine, depending on file type, which loads the work area back into the appropriate array for saving. Any

Software for

COMPUTER WIDOWS®

Now everyone can share in the fun of owning an Apple. Designed with practical home applications in mind, these versatile programs require no prior computer experience or time-consuming study.

MEMORY JOGGER: Never again forget an appointment, birthday or payment due. Identifies upcoming important dates for the time period you specify.

RECIPE INDEX: Organizes recipes from multiple sources and finds them by key ingredient, course, notionality, etc.

ADDRESS BOOK: In addition to the features you'd expect, can tell who was invited to your last party, received a Christmas card, sent a wedding present...

For the Apple® II+, 48K, one disk drive

\$29 each. All three for \$65

Packaged for gift giving.

Send check today to:

CRAFTSBURY SOFTWARE, Inc.

1623 Montague St., N.W. Dept. X
Washington, D.C. 20011



Credit Card Orders
24-Hour Toll-Free



800-227-1617 ext. 258

800-772-3545 ext. 258 in CA

Dealer inquiries invited.

Apple® is a reg. TM of Apple Computer.

BOB,
NOTHING COULD
BE SIMPLER!
IT EVEN PROVIDES
THE OPTION OF
TAPPING INTO THE
DOW JONES
NEWS/RETRIEVAL®
SERVICE.


```

viewport(%0,%559,%0,%191)
140 PERFORM moveto(%28,%128):
PRINT#1;" 560 X 192 ";
145 PERFORM moveto(%253,%128):
PRINT#1;" 280 X 192 ";
150 PERFORM moveto(%233,%98):
PRINT#1;" 140 X 192 ";
155 PERFORM moveto(%233,%67):
PRINT#1;" Command Keys "
165 PERFORM moveto(%7,%57):PRINT#1;
" Arrow keys move cursor  ESCAPE
quits current mode  SPACE
toggles bits";
170 PERFORM moveto(%69,%45):PRINT#1;
" 0 : Catalog  3 : Delete  6
: Clear"
180 PERFORM moveto(%69,%36):PRINT#1;
" 1 : Save  4 : Edit  7
: Define"
190 PERFORM moveto(%69,%27):PRINT#1;
" 2 : Load  5 : Invert  8
: View"
200 PERFORM grafixon
210 prompt$="Select a Command: "
215 GOSUB 3000
220 IF fin THEN 1000
225 a=ASC(MID$(line$,1,1))
230 IF a>47 AND a<57 THEN ON a-47
GOSUB 1200,1100,1400,1300,250,
1500,1700,2500,1900:GOTO 210
235 GOSUB 3070:GOTO 210
250 GOSUB 450
255 cflash= NOT cstate
260 ON KBD GOTO 280
265 PERFORM moveto(%chorz*4+7,
%cvert*2+134)
270 PERFORM drawimage(@shex%(0,0),
%32,%24+cflash*4,%0,%4,%2)
275 cflash= NOT cflash:FOR z=1 TO
5+200*( NOT cstate):NEXT:
GOTO 270

```

```

280 OFF KBD:PERFORM
drawimage(@shex%
(0,0),%v32%,%24+cstate*4,%0,
%4,%2)
285 key= KBD:IF key= 27 THEN
kvl=0:POP:GOTO 210
290 IF key>127 THEN skp=cw:key=
key-128:ELSE:skp= 1
295 kvl=INSTR(ctr$(CHR$(key)))
300 IF kvl THEN ON kvl GOTO 315,
320,325,330,335,1500,1700
305 ON KBD GOTO 280
310 RETURN
315 IF left<=chorz-skp THEN chorz=
chorz-skp:GOSUB 450:GOTO 340:
ELSE:GOTO 340
320 IF right>=chorz+skp THEN chorz=
chorz+skp:GOSUB 450:GOTO 340:
ELSE:GOTO 340
325 IF top>=cvert+skp THEN cvert=
cvert+skp:GOSUB 450:GOTO 340:
ELSE:GOTO 340
330 IF bot<=cvert-skp THEN cvert=
cvert-skp:GOSUB 450:GOTO 340:
ELSE:GOTO 340
335 GOSUB 450:GOSUB 470:GOSUB 400:
IF ch<15-cvert THEN ch=15-cvert
340 PERFORM moveto(%chorz*4+7,
%cvert*2+134)
345 ON KBD GOTO 280
350 RETURN
400 PERFORM moveto(%chorz*4+7,
%cvert*2+134):PERFORM drawimage
(@shex%(0,0),%32,%24+cstate*4,
%0,%4,%2)
410 PERFORM moveto(%chorz+7,
%cvert+102):PERFORM drawimage
(@shex%(0,0),%32,%6+cstate,%3,
%1,%1)
415 PERFORM moveto(%chorz*2+157,
%cvert+102):PERFORM drawimage
(@shex%(0,0),%32,%12+cstate*2,
%2,%2,%1)
420 PERFORM moveto(%chorz*4+7,
%cvert+72):PERFORM drawimage
(@shex%(0,0),%32,%24+cstate*4,
%0,%4,%1)
425 RETURN
450 col=INT(chorz/16):bitnum=
chorz-col*16
455 cval$=HEX$(work%(col,15-cvert)):
nibpos=INT(bitnum/4):nib$=MID$
(cval$,nibpos+1,1)
460 bit=bitnum-nibpos*4:cstate=bits%
(TEN(nib$),bit)
465 RETURN
470 cnval=2^(3-bit):IF cstate THEN
cnval=-cnval
475 SUB$(cval$,nibpos+1,1)=MID$(HEX$
(TEN(nib$)+cnval),4,1)
480 work%(col,15-cvert)=TEN(cval$)
485 cstate= NOT cstate
490 RETURN
600 PERFORM viewport(%5,%556,%131,
%166):PERFORM fillport
605 PERFORM viewport(%5,%135,%101,
%118):PERFORM fillport
610 PERFORM viewport(%155,%420,%101,
%118):PERFORM fillport
615 PERFORM viewport(%5,%540,%71,
%88):PERFORM fillport
620 PERFORM
viewport(%0,%559,%0,%191)
625 RETURN
1000 REM clean up and go home
1005 HOME:TEXT
1010 PERFORM release:PERFORM
release:PERFORM release
1015 INVOKE
1020 CLOSE
1030 END

```

```

1100 IF choice=1 THEN filtyp=1:GOTO
1125
1105 prompt$="Save as a "
+name$(1)+" ", "+name$(2)+" or "
+name$(3)+"? "
1110 GOSUB 3000:IF fin THEN RETURN
1115 a$=MID$(line$,1,1):filtyp=
INT(INSTR(" Ss Cc Ff"),a$)/3)
1120 IF filtyp=0 THEN 1105
1125 prompt$="Pathname of Save file: "
:GOSUB 3000
1130 IF fin AND choice=1 THEN RETURN:
ELSE:IF fin THEN 1105
1135 ON ERR GOTO 1190
1140 OPEN#3,line$
1145 IF TYP(3)=8 THEN message$=
"INVALID, "+line$+" is a TEXT
file.":GOSUB 3100:GOTO 1125
1150 IF TYP(3)=0 THEN 1170
1155 prompt$="Ok to destroy old data in file "
+line$+"? ":GOSUB 3000
1160 IF fin THEN 1125
1165 IF NOT INSTR("Yy"),MID$
(line$,1,1) THEN 1125
1170 IF filtyp<>3 THEN WRITE#3,0;
filtyp,ch,cw,sl:WRITE#3,1;
0:READ#3,1
1175 ON choice GOSUB 3750,3850,3860
1178 IF choice>1 AND choice<>filtyp
THEN GOSUB 2000
1180 array$=ary$(filtyp):PERFORM
filwrite(%3,@array$,%size%
(filtyp))
1185 message$=name$(filtyp)+" saved.":
GOSUB 3100:CLOSE#3:OFF ERR:
RETURN
1190 message$="Error in opening or
writing to file. ":GOSUB 3100
1195 OFF ERR:GOTO 1125
1200 prompt$="Pathname to Catalog: "
1205 GOSUB 3000
1210 IF fin THEN delay=1:RETURN
1215 oldpre$= PREFIX$
1220 ON ERR GOTO 1270
1225 PREFIX$=line$
1230 OPEN#8 AS INPUT, PREFIX$
1235 OFF ERR
1240 ON EOF#8 GOTO 1285
1245 delay=0
1250 INPUT#8,message$
1255 IF MID$(message$,1,10)=" "
THEN 1250
1260 GOSUB 3100
1265 GET a$:IF ASC(a$)=27 THEN 1285:
ELSE GOTO 1250
1270 message$=line$+" is not a valid
Prefix"
1275 delay=1:GOSUB 3100
1280 OFF ERR
1285 PREFIX$=oldpre$
1290 GOTO 1200
1300 prompt$="Pathname of file to Delete: "
1305 GOSUB 3000
1310 IF fin THEN RETURN
1315 ON ERR GOTO 1360
1320 OPEN#8 AS INPUT,line$
1325 IF TYP(8)<>1 THEN message$=
line$+" is not a Save file":
GOSUB 3100:CLOSE#8:GOTO 1300
1330 ON ERR GOTO 1380
1335 CLOSE#8:DELETE line$
1340 OFF ERR
1345 message$=line$+" deleted."
1350 GOSUB 3100:GOTO 1300
1360 OFF ERR
1365 message$="Cannot delete "+line$+"
(doesn't exist or can't be opened)"
1370 GOSUB 3100:GOTO 1300
1380 OFF ERR
1385 message$="Cannot delete "+line$+"
(write-protected or locked)"

```

GAME DESIGNER

You Have the Inspiration
We Have the Tools
introducing
THE FROB™

The hardware/software system
that converts your Apple® II into
a sophisticated Atari® 2600
VCS™ game development
workstation.

Now Available for the Atari
5200 HES™

Five minutes to install

No machine modification

Operational simplicity

Real time game development

Order Now For Immediate Delivery.
CALL 408-429-1552



FROBCO, a Div. of
Tri-Comp Polytechnical, Inc.
P.O. Box 2780
Santa Cruz, CA 95063

**The Miracle of Creation
Can Be Yours™**

FROB is a trademark of FROBCO.

Atari and Apple are registered trademarks of
Atari, Inc. and Apple Computers, Inc.
respectively. VCS and HES are trademarks of
Atari, Inc.


```

1390 GOSUB 3100:GOTO 1300
1400 prompt$="Load a "+name$(1)+" , a "
      +name$(2)+" or a "+name$(3)+"? "
1405 GOSUB 3000:IF fin THEN RETURN
1410 a$=MID$(line$,1,1):choice=INT
      (INSTR(" Ss Cc Ff",a$)/3)
1415 IF choice<1 OR choice>3 THEN
      GOSUB 3070:GOTO 1400
1420 prompt$="Pathname of "+name$
      (choice)+" : "
1425 GOSUB 3000:IF fin THEN 1400
1430 ON ERR GOTO 1455
1435 array$=ary$(choice):IF
      choice <> 3 THEN
      OPEN#3,line$:GOTO 1450
1440 ch=7:font$=CHR$(34)+line$+CHR$
      (34):PERFORM getfont(@font$,
      @array$)
1445 OFF ERR:GOSUB 3950:GOTO 1485
1450 IF TYP(3)=1 THEN READ#3;
      filtyp,ch,cw,sl:IF filtyp=
      choice THEN 1470
1455 message$="Not a "
      +name$(choice)+" file.":GOSUB
      3100
1460 OFF ERR:IF choice=3 THEN 1420
1465 CLOSE#3:IF TYP(3)=0 THEN DELETE
      line$:GOTO 1420:ELSE:GOTO 1420
1470 READ#3,1:PERFORM filread(%3,
      @array$, %size%(filtyp),@ret%)
1475 CLOSE#3:IF ret%=size%(filtyp)
      THEN 1485
1480 message$=name$(choice)+" in "
      +line$+" is invalid.":GOSUB
      3100:GOTO 1420
1485 GOSUB 3600:message$=name$
      (choice)+" loaded.":GOSUB 3100
1490 RETURN
1500 prompt$="Invert Row, Column, Block
      or Work space? "
1505 GOSUB 3000:IF fin AND kv1 THEN
      GOSUB 3500:GOSUB 450:GOTO 340
1510 IF fin THEN RETURN
1515 a$=MID$(line$,1,1)
1520 a=INT(INSTR(" Rr Cc Bb Ww",a$)/3)
1525 IF NOT a THEN GOSUB 3060:GOTO
      1500
1530 ON a GOTO 1540,1570,1600,1640
1540 crow=15-cvert
1545 FOR i=0 TO sl:b$=HEX$(work%
      (i,crow))
1500 work%(i,crow)=TEN(MID$(HEX$
      (255-TEN(MID$(b$,1,2))),3,2)
      +MID$(HEX$(255-TEN(MID$
      (b$,3,2))),3,2))
1555 NEXT
1560 rs=crow:re=crow:bw=0:ew=sl
1565 GOSUB 3610:GOTO 1500
1570 cur.vert=cvert
1575 FOR cvert=15-ch TO 15
1580 GOSUB 450:GOSUB 470:GOSUB 400
1585 NEXT
1590 cvert=cur.vert
1595 GOTO 1500
1600 cloc=INT(chorz/16):chalf=
      (chorz-16*cloc>7):st=chalf*2+1
1605 FOR i=0 TO ch:b$=HEX$(work%
      (cloc,i))
1610 SUB$(b$,st,2)=MID$(HEX$
      (255-TEN(MID$(b$,st,2))),3,2)
1615 work%(cloc,i)=TEN(b$)
1620 NEXT i
1625 bw=cloc:ew=cloc:rs=0:re=ch
1630 GOSUB 3610:GOTO 1500
1640 FOR crow=0 TO ch:FOR i=0 TO
      sl:b$=HEX$(work%(i,crow))
1645 work%(i,crow)=TEN(MID$(HEX$
      (255-TEN(MID$(b$,1,2))),3,2)
      +MID$(HEX$(255-TEN(MID$
      (b$,3,2))),3,2))
1650 NEXT:NEXT

```

LOCK-IT-UP

DISKETTE COPY-PROTECTION AND DUPLICATION SYSTEMS FOR THE APPLE COMPUTER

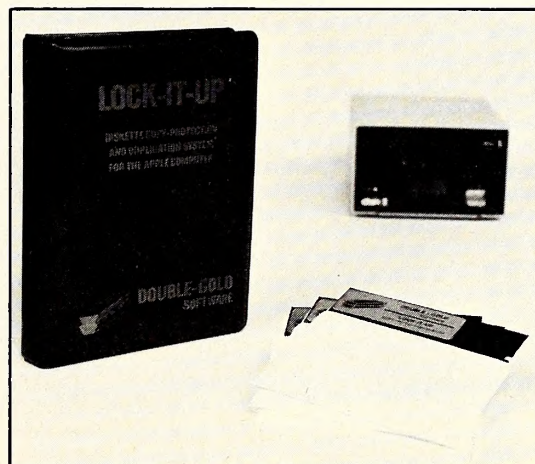
The Lock-It-Up systems are sophisticated, menu driven copy-protection and duplication utilities for the Apple II Computer. They feature several levels of protection which make standard diskettes uncopyable by even the most sophisticated nibble copy programs currently available.

- All sectors on the diskette can still be used.
- Data files can be loaded and/or saved to either the protected diskette or an unprotected diskette.
- Memory will be cleared and the disk will reboot if the reset key is pushed.
- The copying systems support up to 14 disk drives.
- Complete data-verification is optional during copy.
- Sequential serial numbers are assigned to each diskette produced by the system.
- Master diskettes created with the system contain an I.D. stamp that you select. The I.D. stamp must be correctly specified before any diskettes can be duplicated. This prevents other Lock-It-Up owners from copying your diskettes.
- Extensive support is provided should you have any problems or special needs.
- Our system is supported by numerous disk copying services should you need a large quantity of diskettes duplicated.

Either system is available for \$225, which includes three diskettes, an informative manual, and a non-exclusive license to copy as many diskettes as needed.

ORDER NOW! Call collect for COD, Mastercard or Visa orders.

DEALER INQUIRIES INVITED



DOS VERSION:

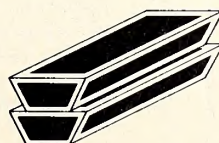
- Any standard DOS 3.3 diskette can be protected.
- DOS command names can be changed and/or deleted.
- Autorun can be used to prevent the listing of a program or the use of any basic commands outside of a program.
- A faster DOS can be used in order to decrease disk access time by up to 50%!

REQUIRES: 48K Apple II or II+ with Applesoft in ROM or language system and at least two disk drives.

PASCAL VERSION:

- Any standard Apple Pascal 1.1 diskette can be protected.
- Files may be transferred to a standard Pascal diskette, but they will not run unless they are on the protected diskette.
- Easily added to any program by use of a Regular Unit.
- Compatible with Apple Fortran.

REQUIRES: Apple Pascal and at least two disk drives.



DOUBLE - GOLD
SOFTWARE

13126 ANZA DRIVE
SARATOGA, CA 95070
(408) 257-2247


```

1655 GOSUB 3607:GOTO 1500
1700 prompt$="Clear Row, Column, Block or
      Work space? "
1705 GOSUB 3000:IF fin AND kvl THEN
      GOSUB 3500:GOSUB 450:GOTO 340
1710 IF fin THEN RETURN
1715 a$=MID$(line$,1,1)
1720 a=INT(INSTR(" Rr Cc Bb Ww",a$)/3)
1725 IF NOT a THEN GOSUB 3060:GOTO
      1700
1730 ON a GOTO 1740,1760,1800,1830
1740 crow=15-cvert
1745 FOR i=0 TO sl:work%(i,crow)=0:NEXT
1750 rs=crow:re=crow:bw=0:ew=sl
1755 GOSUB 3610:GOTO 1700
1760 cur.vvert=cvert
1765 FOR cvert=15-ch TO 15
1770 GOSUB 450:IF cstate THEN GOSUB
      470:GOSUB 400
1775 NEXT
1780 GOTO 1700
1800 cloc=INT(chorz/16):chalf=
      (chorz-16*cloc>7):st=chalf*2+1
1805 FOR i=0 TO ch:b$=HEX$(work%
      (cloc,i))
1810 SUB$(b$,st,2)="00":work%
      (cloc,i)=TEN(b$):NEXT
1815 bw=cloc:ew=cloc:rs=0:re=ch
1820 GOSUB 3610:GOTO 1700
1830 FOR crow=0 TO ch:FOR i=0 TO
      st:work%(i,crow)=0:NEXT:NEXT
1835 GOSUB 600:GOTO 1700
1900 IF choice=1 THEN GOSUB
      3605:RETURN
1905 IF choice=2 THEN GOSUB
      3850:ELSE:GOSUB 3860
1910 GOSUB 3800
1915 GOSUB 3605
1920 RETURN
2000 ON filtyp GOSUB 3750,2100,2200

```

```

2005 RETURN
2100 message$="Transferring Font format to
      Character set format":GOSUB 3100
2105 FOR k=0 TO 63:j=8*k-1
2110 FOR i=0 TO 7 STEP 2:j=j+1:
      a$=HEX$(cset%(j)):b$=HEX$
      (cset%(j+4))
2115 char%(k,i)=TEN(MID$(a$,1,2)
      +MID$(b$,1,2))
2120 char%(k,i+1)=TEN(MID$(a$,3,2)
      +MID$(b$,3,2))
2125 NEXT:NEXT
2130 FOR k=64 TO 127:FOR i=0 TO
      7:char%(k,i)=0:NEXT:NEXT
2135 FOR k=0 TO 127:FOR i=8 TO
      15:char%(k,i)=0:NEXT:NEXT
2140 RETURN
2200 message$="Transferring Character set
      format to Font format":GOSUB 3100
2205 FOR k=0 TO 63:j=8*k-1
2210 FOR i=0 TO 7 STEP 2:j=j+1:
      a$=HEX$(char%(k,i)):b$=HEX$
      (char%(k,i+1))
2215 cset%(j)=TEN(MID$(a$,1,2)+MID$
      (b$,1,2))
2220 cset%(j+4)=TEN(MID$(a$,3,2)
      +MID$(b$,3,2))
2225 NEXT:NEXT
2230 GOSUB 3950
2235 RETURN
2500 prompt$="Character height is
      now "+CONV$(ch+1)+" . New value: "
2505 GOSUB 3000:IF fin THEN 2550
2510 a=CONV(line$)
2515 IF a < 1 OR a > 16 THEN message$=
      "Character height must be between 1
      and 16":GOSUB 3100:GOTO 2500
2520 ch=a-1:message$="Character
      height is now "+CONV$(ch+1)+" .":
      GOSUB 3100
2550 prompt$="Character width is now "
      +CONV$(cw)+" . New value: "
2555 GOSUB 3000:IF fin THEN 2600
2560 a=CONV(line$)
2565 IF a<1 OR a>255 THEN message$=
      "Character width must be between 1
      and 255":GOSUB 3100:GOTO 2550
2570 cw=a:message$="Character width
      is now "+CONV$(cw)+" .":GOSUB
      3100
2600 prompt$="Work area width in
      dots (must be 16,32,48,64,80,96,
      112 or 128: "
2605 GOSUB 3000:IF fin THEN 2700
2610 a=CONV(line$)/16-1
2615 IF INT(a)<>a THEN message$=
      "Width must be a multiple of 16":
      GOSUB 3100:GOTO 2600
2620 IF a<0 OR a>7 THEN message$=
      "Width must be between 16 and 128":
      GOSUB 3100:GOTO 2600
2625 sl=a:message$="Work area width
      is now "+CONV$(a+1)*16+" .":GOSUB
      3100
2630 right=(a+1)*16-1
2635 message$="Definitions complete."
      :GOSUB 3100
2640 RETURN
3000 REM Accept a message from the
      window
3005 GOSUB 3500:PERFORM moveto
      (%7,%9):PRINT#1:prompt$;
3010 line$="":fin=0
3015 GET a$:a=ASC(a$)
3020 IF a>31 THEN PRINT#1:a$;:
      line$=line$+a$:GOTO 3015
3025 IF a=13 THEN fin=LEN(line$)=
      0:RETURN
3030 IF a=27 THEN fin=2:RETURN
3035 IF a<>8 THEN 3015
3040 IF LEN(line$)=0 THEN 3015

```

```

3045 PERFORM moverel(%-7,%0):
      PRINT#1;" ";PERFORM moverel
      (%-7,%0)
3050 line$=MID$(line$,1,LEN
      (line$)-1)
3055 GOTO 3015
3060 REM print an error message
3070 PERFORM moveto(%450,%9)
3075 PRINT#1;"INVALID":FOR i=1 TO
      500:NEXT
3080 PERFORM moveto(%450,%9)
3085 PRINT#1;" ";
3090 RETURN
3100 GOSUB 3500
3110 PERFORM moveto(%7,%9):PRINT#1:
      message$;
3120 FOR i=1 TO 750*delay:NEXT
3130 RETURN
3500 PERFORM viewport(%5,%556,%1,
      %10):PERFORM fillport
3510 PERFORM viewport(%0,%559,%0,
      %191)
3520 RETURN
3600 ON choice GOSUB 3700,3800,3800
3605 GOSUB 600
3607 rs=0:re=ch:bw=0:ew=sl
3610 xdot=7:ydot=164:rows=2:width=
      16:srow=0
3615 GOSUB 3670
3620 PERFORM moveto(%7,%117)
3625 PERFORM drawimage(@work%(0,0),
      %16,%0,%0,%128,%ch+1)
3630 xdot=157:ydot=117:rows=1:
      width=8:srow=2
3635 GOSUB 3670
3640 xdot=7:ydot=87:rows=1:width=
      16:srow=0
3645 GOSUB 3670
3650 RETURN
3670 xhorz=xdot+16*bw*(width/4)
3675 FOR k=rs TO re:PERFORM moveto
      (%xhorz,%ydot-rows*k):FOR
      i=bw TO ew
3677 IF work%(i,k)=0 THEN PERFORM
      moverel(%width*4,%0):GOTO 3695
3680 a$=HEX$(work%(i,k)):FOR j=1 TO
      4:dhex%=TEN(MID$(a$,j,1))
      *width
3685 PERFORM drawimage( shex%(0,0),
      %32,%dhex%,%srow,%width,%rows)
3690 PERFORM moverel(%width,%0):
      NEXT
3695 NEXT:NEXT
3698 RETURN
3700 FOR i=0 TO 7:FOR j=0 TO
      ch:work%(i,j)=shape%(i,j):NEXT:NEXT
3705 RETURN
3750 FOR i=0 TO 7:FOR j=0 TO 15:
      shape%(i,j)=work%(i,j):NEXT:NEXT
3755 RETURN
3800 prompt$="Starting Character number
      to display: "
3805 GOSUB 3000
3810 IF fin THEN cr=0:GOTO 3850
3815 cr=VAL(line$)
3820 IF cr<0 OR cr>254 THEN message$=
      "Number out of range":GOSUB
      3100:GOTO 3800
3822 IF choice=3 THEN 3900
3825 IF cr/2<>INT(cr/2) THEN
      message$="Character number must
      be even (0,2,4, etc.)":GOSUB
      3100:GOTO 3800
3830 wd=cr/2:sl=7:IF wd+sl>127
      THEN sl=127-wd
3835 FOR i=0 TO ch:FOR j=0 TO sl:
      work%(j,i)=char%(wd+j,i):
      NEXT:NEXT
3840 RETURN
3850 FOR i=0 TO ch:FOR j=0 TO sl:
      char%(wd+j,i)=work%(j,i):

```



COMPATABLE HARDWARE

• 80 Column Video Card	99.95
• Z-80 CP/M Card	99.95
• Language Card	99.95
• Disk Interface Card	99.95
• Serial (RS 232-C) Card	99.95
• Epson Printer Card	99.95
• Integer Basic Card	89.95
• Parallel Interface Card	89.95
• Joy Stick	29.95
• R.F. Modulator	14.95

Dealer Inquiries Invited



FRANKENSTEIN Computer

P.O. Box 4846, Lafayette, IN 47905

- Fine Print — Certified check, money order or personal check (allow 2 additional weeks), no C.O.D., manufacturer's 12 month warranty delivery 30 days. Include \$5.00 shipping and handling, Indiana residents add 5% sales tax.


```

NEXT:NEXT
3855 RETURN
3860 FOR k=0 TO sl:skip=8*k-1
3865 FOR i=0 TO 7 STEP 2:j=j+1:
a$=HEX$(work%(k,i)):b$=HEX$
(work%(k,i+1))
3870 cset%(j)=TEN(MID$(a$,1,2)+MID$
(b$,1,2))
3875 cset%(j+4)=TEN(MID$(a$,3,2)
+MID$(b$,3,2))
3880 NEXT:NEXT
3885 RETURN
3900 IF cr>127 THEN
message$="Character range must be
0-127":
GOSUB 3100:GOTO 3800
3910 skip=4*cr:sl=7:IF cr+2*sl>126
THEN sl=(126-cr)/2
3915 FOR k=0 TO sl:skip=8*k-1
3920 FOR i=0 TO 7 STEP 2:j=j+1:a$=
HEX$(cset%(j)):b$=HEX$(cset%
(j+4))
3925 work%(k,i)=TEN(MID$(a$,1,2)
+MID$(b$,1,2))
3930 work%(k,i+1)=TEN(MID$(a$,3,2)
+MID$(b$,3,2))
3935 NEXT:NEXT
3940 RETURN
3950 message$="Preparing the character
font":GOSUB 3100
3955 FOR k=0 TO 511:b$=HEX$(cset%
(k)):cset%(k)=TEN(HEX$
(v256*flip(TEN(MID$(b$,1,2)))
+flip(TEN(MID$(b$,3,2))))):NEXT
3960 RETURN
4000 DATA 0000,000F,00F0,00FF,0F00,
0F0F,0FF0,0FFF
4005 DATA F000,F00F,F0F0,F0FF,FF00,
FF0F,FFF0,FFFF
4010 DATA 0003,0C0F,3033,3C3F,C0C3,
CCCF,F0F3,FCFF
4015 DATA 0123,4567,89AB,CDEF
4025 DATA 0,8,4,12,2,10,6,14,1,9,5,
13,3,11,7,15
4026 DATA 0,0,0,0,0,0,0,1,0,0,1,0,0,
0,1,1,0,1,0,0,0,1,0,1,0,1,1,0,
0,1,1,1
4027 DATA 1,0,0,0,1,0,0,1,1,0,1,0,1,
0,1,1,1,1,0,0,1,1,0,1,1,1,1,0,
1,1,1,1
4028 FOR i=0 TO 15:READ block$(i):
NEXT
4030 FOR i=0 TO 15:h%=TEN(block$
(i)):shex%(i,0)=h%:shex%(i,1)=
h%:NEXT
4035 FOR i=0 TO 7:READ a$:shex%
(i,2)=TEN(a$):NEXT
4040 FOR i=0 TO 3:READ a$:shex%
(i,3)=TEN(a$):NEXT
4045 FOR i=0 TO 15:READ lookup(i):NEXT
4050 FOR i=0 TO 15:FOR j=0 TO 3:READ
bits%(i,j):NEXT:NEXT
4055 v256=256:v16=16
4060 FOR i=0 TO 255:a$=HEX$(i):
flip(i)=v16*lookup(TEN(MID$
(a$,4,1)))+lookup(TEN(MID$
(a$,3,1))):NEXT
4065 sh=7:sl=7:ch=7:cw=8:choice=2:
cr=0:wd=0:skip=0
4070 name$(1)="Shape definition":
name$(2)="Character set":
name$(3)="Font"
4075 ary$(1)="shape%":ary$(2)=
"char%":ary$(3)="cset%"
4080 size%(1)=256:size%(2)=2048:
size%(3)=1024
4085 ctrl$=CHR$(8)+CHR$(21)+CHR$
(11)+CHR$(10)+CHR$(32)+"5"+"6"
4090 left=0:right=127:top=15:bot=0:
cvert=15:chorz=0:delay=1
4500 RETURN

```

**OUR DAISIS
THRIVE WITH
THE NEW
APPLE IIe**

**PICK A
DAISI**

(Data Acquisition and Instrumentation Systems Interface)

To automate your lab—

Exciting new capabilities can blossom in your lab—when you automate it with the DAISI family of data acquisition peripherals for your Apple Computer.

DAISI interfaces, from Interactive Structures, turn your economical Apple into a personal electronic lab assistant. DAISI products are designed to read instruments and sensors, control temperature and pressure . . . with reliability and precision.

Here's a rundown on some DAISI interfaces

AI13, 12-Bit Analog Input System—\$550

■ 16 input channels ■ 20 microseconds conversion time.

AI02, 8-Bit Analog Input System—\$299

■ 16 input channels ■ 70 microseconds conversion time.

AO03, 8-Bit Analog Output System—\$195-\$437

■ up to 8 independent channels ■ range and offset adjustable.

DI09, Digital Interface with Timers—\$330

■ timing and interrupt capability ■ direct connection to BCD digits, switches, relays.

Don't settle for garden variety equipment for your laboratory applications. Get the best—at a great price. Pick a DAISI!



Interactive Structures Inc.
146 Montgomery Ave.
Bala Cynwyd, PA 19004
(215) 667-1713

Call us for the DAISI dealer near you.

All DAISI interfaces come complete with cable, instructional diskette and comprehensive manual.





BY JUDVANN CHRISTENSEN

"Controlling my house with an Apple has done wonders for my social life," Mike Graziano quips facetiously. "In the middle of my entertaining a date, my computer's voice synthesizer blurts out that Ralph's using the cat box. It's hard to continue being romantic after that!"

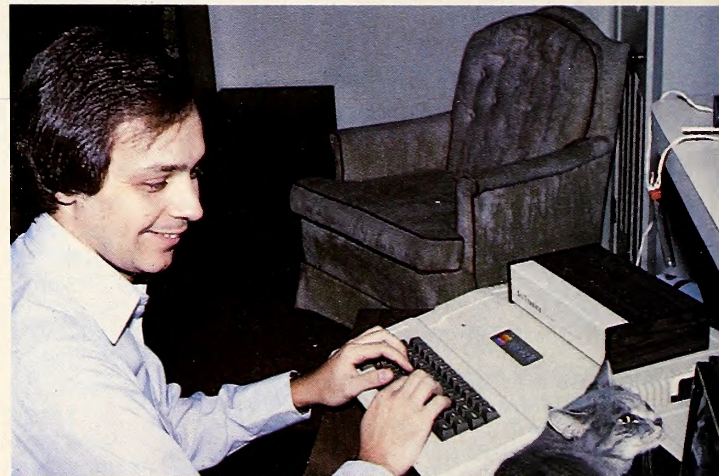
Such situations are commonplace to Graziano, a technical analyst for Hartford Insurance Group in Connecticut, and his unique housekeeping system. A bachelor with time on his hands and a lively sense of humor, Graziano didn't program a typical housekeeping system; his Apple's chief chore as homemaker is keeping tabs on a tabby named Ralph.

Graziano's system starts with the essentials. Every indoor cat needs to visit a cat box several times a day, and Ralph's cat box is unlike any other on the block. It sports a photoelectric light cell in the doorway to notify the Apple each time Ralph slinks in. After waiting a few minutes for Ralph to do her thing undisturbed, the computer activates a fan above the cat box that scatters the vapors from Ralph's tiny rest room.

Modesty has not been considered. Ralph's powder room visits are noted by the system twice. When Ralph pussyfoots past the light cell, the voice synthesizer immediately announces throughout the townhouse, "Ralph is in the potty," and it keeps a running total of her visits. Then, after Ralph uses her water closet a prescribed number of times, cleaning the w.c. is automatically added to Graziano's automated to-do list.

The biggest benefit of the electronic cat-patrol accrues when Graziano is on the road for days at a time. It enables him to check on Ralph. He just phones his Apple, which is hooked through an acoustic coupler to the phone lines, to learn how often Ralph has been activating the light source on her latrine. If Ralph's schedule is not the usual, Graziano calls a neighbor to check on her.

Not one to let his cat become bored, Graziano programmed the computer to keep Ralph entertained. At random times during every hour, the



synthesizer says, "Hi, Ralph." Obliging, the cat curls her long tail in reply.

"I used to have the synthesizer say, 'Hi, ugly,' but I kept responding to it. It was driving me crazy and offending my visitors," adds Graziano.

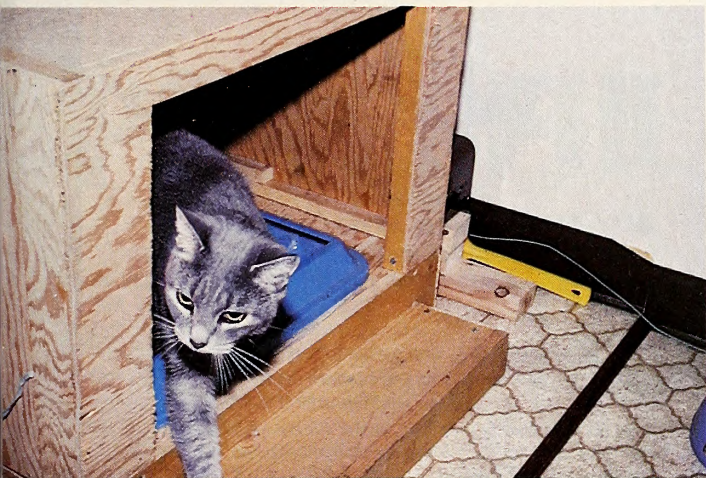
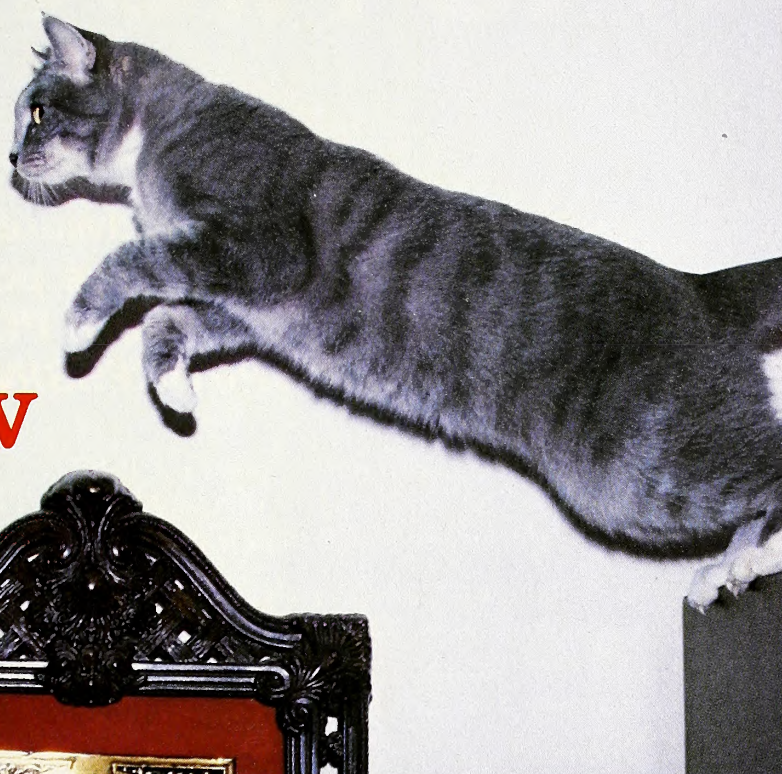
Cat-sitting is only a part of Graziano's extensive housekeeping system. His home management program is written in Basic with some assembly language routines. The system includes a 48K Apple II with Applesoft card, communications card, Mountain clock, Echo II speech synthesizer, SciTronics remote controller, ComData acoustic coupler, and an originate/answer modem.

"With these electronic workhorses, I have the power to be as creative as I want."

In the three years he has had his system, Graziano has been very creative. He even planned ahead to let his imagination run wild. While



The Cat That's the Apple's Meow



A day in the life of a high-tech kitty. Ralph works out, checks on the output of her in-house programmer, and tests the photoelectric sensor in her home control system. A speech synthesizer, Mountain clock, modem, and acoustic coupler all go into making up the recipe for gracious feline living.

At 7:00, the Apple lowers the temperature until late afternoon, when it raises it again in anticipation of Graziano's return. To lower the thermostat, the computer activates a heater that generates a small amount of hot air next to the thermostat. This stimulates the thermostat's meter to lower the heat. At 10:30 p.m., the electric blanket turns back on to provide another comfortably toasty night for Graziano. Ralph does without.

Weekends vary from this regimen. The heat turns on at 9:00 a.m. and the electric blanket shuts off at noon. Unfortunately, even though the weekend routines are activated automatically, once in a while the human programmer makes an error.

"More than once I've been awakened at 6:15 a.m. because I forgot to notify the computer of a holiday," Graziano admits with a sigh. "On those days, I feel like ripping the system out of my house."

When Graziano has a late night, the computer knows it. If he doesn't activate the front door sensor on schedule, the simulator is programmed to turn on the lights at random times—as if he were at home. As soon as he arrives, the computer continues its daily routine as if he had been home all evening. When Graziano travels, he has the computer bypass all daily routines and turn on the lights at random times to simulate his being home.

Graziano has missed no convenience programming his system. He no longer has to fumble for his door keys. As he nears home, a transmitter in his car conveniently turns on the porch light, as well as his stereo. As he parks, the door automatically unlocks. Yet, even the best-laid plans of Mike Graziano are apt to go awry. Once, a friend who'd borrowed the place for the day reprogrammed the stereo to blare out

building a condominium last year, he installed a complex system of wires to ensure the capacity to connect his system to as many electronic appliances as possible.

Man's Best Friend, Too. A typical weekday for Graziano's Apple starts at midnight. That's when it automatically lowers the heat for the time Graziano and Ralph are sleeping. At 6:00 a.m., it raises the temperature ten degrees to tempt man and cat out of bed. At 6:15, the computer turns on the stove to boil water for morning coffee, while the synthesizer drones, "Good morning, Mike," in an unconvincing monotone. If Graziano doesn't get out of bed, the pleasantries are repeated until he turns it off. Then the system politely rewards Mike with a "thank you" for getting out of bed.

When 6:30 rolls around, the system turns off the electric blanket. "This makes me want to get up because it's as cold in bed as it is outside," says Graziano.



CO-PROCESSING

**The hardware answer
to software portability.
From PCPI
The COPROCESSING™ Company.**

Now you can run all the most popular CP/M® packages on your Apple, with APPLI-CARD™, the one-card answer to CP/M portability!

Only APPLI-CARD provides you with CP/M plus all these features:

- One card WordStar® execution with upper and lower case
- 64K on-card memory
- 40-255 column horizontal scroll
- Choice of application
- 2K PROM, Realtime clock and expansion interface all on-card
- Z80A® or Z80B with memory
- Menu driven set up
- 63K available for program development or execution

**\$1100
value for
\$595**

BUY THIS — 6MHz APPLI-CARD
(with all the features described above)
for \$595 —**AND GET THIS TOO**
FMS-81 Data Management System!

This is the exact same top-rated \$495 Data Management System you've seen reviewed in leading computer publications. And it can be yours by return mail when you purchase your 6MHz APPLI-CARD from your local dealer. Simply mail us the special enclosed warranty card and \$14.95 to cover handling and shipping charges and FMS/81 is yours!

**\$545
value for
\$445**

BUY THIS — 4MHz APPLI-CARD
(with all the features described above)
for \$445 —**AND GET THIS TOO**
TARGET PlannerCalc!

PlannerCalc is the new, best selling \$99 financial planning electronic spread sheet. And it can be yours by return mail when you purchase your 4MHz APPLI-CARD from your local dealer. Simply mail us the special enclosed warranty card and \$14.95 to cover handling and shipping and PlannerCalc is yours!

THAT'S NOT ALL!

WordStar, CBasic, dBASEII and other CP/M-based programs are available with APPLI-CARD at low package-prices! Contact your local dealer.

(Dealers may contact SOFTSEL, MICRO D, Lifeboat Associates or other selected distributors for information.)
If you prefer contact us directly for prices and your nearby dealer where you can see APPLI-CARD in action.



Personal Computer Products, Inc.

16776 Bernardo Center Drive, San Diego, California 92128 (619) 485-8411

The COPROCESSING™ Company

Co-Processing is a trademark of Personal Computer Products, Inc. APPLI-CARD is a trademark of Personal Computer Products Inc.
CP/M is a registered trademark of Digital Research, Inc. WordStar is a registered trademark of Micropro, Inc.
Z80 is a registered trademark of Zilog, Inc.

"The Stripper" when Graziano and his date arrived home that night. "Boy, was I embarrassed."

Ralph isn't the Apple's only ward. It also takes care of Graziano. For example, he must review his automated tickler file each morning before he leaves for work. If he doesn't, the synthesizer reminds him aloud and the front door sensor won't let him out.

No detail of Graziano's or Ralph's lives is overlooked by the to-do list. Twice each day, at 6 a.m. and at 6 p.m., the system updates Graziano's reminders, first from a permanent list of important dates, such as his parents' birthdays, and second from a temporary list of appointments to remember and bills to pay.

These are just a few of Mike Graziano's computer connections. His system is capable of hooking up as many as 255 electrical appliances and devices—although he uses only twelve so far. In addition, a security system links all the townhouse doors and windows to the computer, and an energy management system maintains a temperate environment. When a hot day cools off, the outside temperature sensor tells the computer to shut off the air conditioning and open an air duct that lets cool air in. Graziano reports a 30 percent minimum decrease in his energy bill since he installed the system.

While You Were Out. A gregarious type, Graziano hates to miss a friend's call. When you phone his house, his system logs the date and time of your call as well as how many times the phone rang. "I count the number of rings because I figure that I'd better call people who let the phone ring eight or nine times," says Graziano. "They must really want to talk."

Even though he doesn't have the computer programmed to answer his phone, it does place calls for him. He has a Motorola Dimension IV voice pager that his Apple actually dials. Then, depending on what it is responding to, the computer will pick out an appropriate phrase and simulate it through the phone lines to Graziano.

"If my house were robbed, the computer would dial the local police department and state six times 'Burglary in progress,' along with my address. Then it would call my pager and tell me, too," says Graziano, referring to a few of the twelve hundred statements that his synthesizer is

programmed to simulate.

"The police are ready for the day that may happen. They have a card on me that says, 'This guy's got a computer that will notify us of burglaries in a very strange voice.'"

That's only one of the many ways that Graziano has computerized his communications. If he has to leave before he receives an expected call, he takes his pager along. When the computer activates his pager, he goes to a nearby phone and, by using a remote tone key, listens to any messages the computer has received since he left.

Best of all, Graziano can still use his computer while he's on the road. When he calls home and lets the phone ring more than a certain number of times, the computer turns on the modem, allowing Mike to talk to it through the phone lines. When he gives the Apple his password, he has full access to the computer—just as if he were sitting in front of the keyboard.

"In the near future, I want to program the system to understand more Touch Tone codes. I can already use a Touch Tone phone as a keyboard to communicate with my Apple. I just type three sixes on my phone and, because it was programmed to recognize certain Touch Tone frequencies, the system will know to turn on the heat, talk to Ralph, or whatever." In order for microprocessor chips to be able to decode high and low Touch Tone frequencies, Graziano is currently developing a decoder card that will plug into his Apple.

Graziano has been interested in electronics since childhood. "When I first got the idea for this system, I shopped around and bought an Apple II. The Apple is wonderfully engineered. It has an interrupt capability that will let me run my daily routines, yet it would suspend any program to alert the police if a burglary were taking place."

As a matter of fact, Graziano's Apple seems to have a mind of its own. When he gives a command that it doesn't understand, it responds with "Huh?" And when he completes a task that the computer assigned him, it even says thank you with a modicum of sincerity.

Unfortunately, the Apple-based housekeeper doesn't yet apologize for accidentally waking Graziano at 6:00 a.m. on holidays or weekends. Perhaps that faux pas isn't yet excusable—electronically or not. ■

POWERFUL PROTECTION

Get Station II and you hold the key that protects your Apple® from theft, unauthorized use, power surges and even power switch failure. With Station II secured, just plug your Apple into one of **three built-in power outlets**, slide it inside and you're covered.

Beyond security, the **key** is also a **power switch** for your Apple, monitor and printer. So you have the convenience of a turnkey system. Plus, the switch takes the wear and tear of re-booting, saving you the costly replacement of your Apple's power supply.

A **surge suppressor** is built-in, too, intercepting power spikes before they can do their damage. And an **optional fan** protects your Apple from overheating.



In addition, Station II pulls your Apple, peripherals, cords and cables together into an attractive, integrated, easy-to-use package. Now **one cord and one wall outlet** power your entire system.

Get powerful protection and system convenience for your Apple II. Order Station II today.

Station II \$129

Fan Kit \$ 49

(Calif. residents add sales tax)

See your dealer or call 800-24TRACE

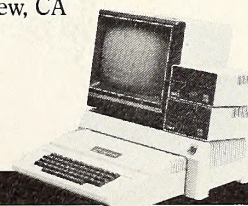
In California call collect (415) 964-3115

Give Visa or M/C number or send check to Trace Systems, 1928 Old Middlefield Way,

Mtn. View, CA 94043.

FOR APPLE II

trace



mockingboard™

What does it do for programs?

It makes wizards speak. It makes frogs croak.
It makes Princesses shriek. It makes Martians
zxnrb. It makes music, bells, gunshots, whistles
and lengthy speeches

It makes Apples talk!

mockingboard

It makes all the noises, says all the words,
blasts all the invaders — It does what once
you could only imagine.

MOCKINGBOARD™ is Apple II® and Apple Plus® compatible. Watch for
MOCKINGBOARD™ compatible with other computers.

Sweet Micro Systems

150 Chestnut Street, Providence, Rhode Island 02903

(401) 273-5333

mockingboard™

Whose programs does it work for? Yours and

Sir-Tech Software, Penguin Software, Sierra On-Line, Datamost, Synergistic Software, Vagabondo Enterprises, Hayden Software Company, Gebelli Software, G.Y.S.T., Budgetco, Lightning Software, Earthware Compter Services, M & R Enterprises, Legend Industries, Sunnyside Software

mockingboard

It makes all the difference in the world. Ask your dealer for a demonstration.

MOCKINGBOARD™ is Apple II® and Apple Plus® compatible. Watch for MOCKINGBOARD™ compatible with other computers.

Apple II and Apple Plus are registered trademarks of Apple Computer Company.

Sweet Micro Systems

150 Chestnut Street, Providence, Rhode Island 02903

(401) 273-5333

DOSTALK

BY BERT KERSEY



This month, let's see if we can cram some more data onto our disks. First, let's review DOS 3.3's disk layout:

Tracks 0-2:	48 Sectors	DOS
Tracks 3-16:	224 Sectors	Data storage
Track 17:	16 Sectors	Disk directory (catalog)
Tracks 18-34:	272 Sectors	More data storage
Total:	560 Sectors	

Tracks 3-16 and 18-34 are where DOS stores data when you execute a save, bsave, or write command. That's a generous 496 (31 times 16) sectors or 126,976 (496 times 256) bytes of storage before you get a "disk full" error message. You can tell how many of those 496 sectors you have used by running FID (on your System Master disk) or by cataloging a disk and totaling the sector numbers next to each file name. Each sector, by the way, contains 256 bytes of data, so to tell roughly how many *K* (thousand bytes) of memory a program uses, divide the number of sectors by four (for example, a (60-sector file occupies about 15K).

Well, even if DOS is generous, let's get greedy and scrounge up some more storage space.

Track 17 is pretty much unavailable, since it's tied up with valuable information about a disk's catalog. Track 17, sector 0, contains the indispensable Volume Table of Contents (VTOC), the place where DOS checks to see which sectors on a disk are free. Track 17, sectors 1-15, contain the names and information regarding each of a disk's files. With seven file names stored per sector and a usually-too-many one hundred five (15 times 7) file names allowed on a disk, we could free up a few sectors here on track 17, but it would hardly be worth the effort.

Tracks 0-2, however, are three tracks that are usually wasted on a disk. They simply contain DOS, the machine language instructions that tell your Apple how to use a disk drive. The thing is, DOS does *nothing* sitting there on your disk; it is only of use when it climbs inside your Apple when you boot! And, in case you hadn't noticed, most disks do not need to be booted. If you are using only normal DOS, you can boot one disk when you get up in the morning and be set until sign-off time.

So, at the expense of making a disk unbootable, let's let DOS overwrite itself and free up some valuable sectors. Get out your *Sector-Reader* program from the October DOSTalk (or any disk zap utility).*

Clear memory by typing:

FP (return)

Now initialize a new disk, and take a look at hex and/or decimal dumps of the VTOC, track 17, sector 0, on that disk. Or take my word for it, and read along. The VTOC on a new disk should look something like that in figure 1.

The numbers in the left columns could be different, depending on

*There was a gross error in the October column. In the *Sector-Reader* program, please change line 250 to read:

```
250 IF DSP$="H" THEN A$="2710.280F N D823G":
FOR X = 1 TO LEN(A$)
```

If you ran *Sector-Reader* the way it was printed, you got an incorrect display when choosing the hex option. We're sorry for the boo-boo.

which utility you're using; we've used simple byte numbers for easy reference. I added the dotted line after byte 55 (\$37); you'll see why later.

First, let's take a look at each byte in the VTOC.

Byte 0 is a 4. I have no idea why.

Byte 1 is a 17 (\$11). This byte tells DOS the *track* where the first catalog sector is located.

Byte 2 is a 15 (\$0F), telling DOS which *sector* of track 17 contains the start of the catalog.

Byte 3 is a 3, meaning this is DOS 3.3.

Bytes 4 and 5 are unused.

Byte 6 is a 254 (\$FE), the disk's volume number.

Bytes 7-38 (\$26) are usually unused, containing zeros. Use these bytes, and other unused VTOC bytes if you want, to store some kind of secret info about your disks.

Byte 39 (\$27) contains a 122 (\$7A), and the reason why isn't very interesting.

Bytes 40-47 (\$2F) are unused.

Bytes 48-49 (\$30-\$31) tell DOS the last track used for storage and the direction of sector allocation.

Bytes 50-51 (\$32-\$33) are unused.

Byte 52 (\$34) tells DOS that thirty-five (\$23) tracks exist on the disk.

		Track 17, Sector 0 (VTOC)															
HEX:		DECIMAL:															
\$00-	04 11 0F 03 00 00 FE 00	0-	4	17	15	3	0	0	254	0							
\$08-	00 00 00 00 00 00 00 00	8-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
\$10-	00 00 00 00 00 00 00 00	16-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
\$18-	00 00 00 00 00 00 00 00	24-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
\$20-	00 00 00 00 00 00 00 7A	32-	0	0	0	0	0	0	0	0	0	0	0	0	122		
\$28-	00 00 00 00 00 00 00 00	40-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
\$30-	12 01 00 00 23 10 00 01	48-	18	1	0	0	0	35	16	0	1						

\$38-	00 00 00 00 00 00 00 00	56-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
\$40-	00 00 00 00 FF FF 00 00	64-	0	0	0	0	0	255	255	0	0						
\$48-	FF FF 00 00 FF FF 00 00	72-	255	255	0	0	255	255	0	0							
\$50-	FF FF 00 00 FF FF 00 00	80-	255	255	0	0	255	255	0	0							
\$58-	FF FF 00 00 FF FF 00 00	88-	255	255	0	0	255	255	0	0							
\$60-	FF FF 00 00 FF FF 00 00	96-	255	255	0	0	255	255	0	0							
\$68-	FF FF 00 00 FF FF 00 00	104-	255	255	0	0	255	255	0	0							
\$70-	FF FF 00 00 FF FF 00 00	112-	255	255	0	0	255	255	0	0							
\$78-	FF FF 00 00 00 00 00 00	120-	255	255	0	0	0	0	0	0	0	0	0	0	0	0	0
\$80-	3F FF 00 00 FF FF 00 00	128-	63	255	0	0	255	255	0	0							
\$88-	FF FF 00 00 FF FF 00 00	136-	255	255	0	0	255	255	0	0							
\$90-	FF FF 00 00 FF FF 00 00	144-	255	255	0	0	255	255	0	0							
\$98-	FF FF 00 00 FF FF 00 00	152-	255	255	0	0	255	255	0	0							
\$A0-	FF FF 00 00 FF FF 00 00	160-	255	255	0	0	255	255	0	0							
\$A8-	FF FF 00 00 FF FF 00 00	168-	255	255	0	0	255	255	0	0							
\$B0-	FF FF 00 00 FF FF 00 00	176-	255	255	0	0	255	255	0	0							
\$B8-	FF FF 00 00 FF FF 00 00	184-	255	255	0	0	255	255	0	0							
\$C0-	FF FF 00 00 00 00 00 00	192-	255	255	0	0	0	0	0	0	0	0	0	0	0	0	0
\$C8-	00 00 00 00 00 00 00 00	200-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
\$D0-	00 00 00 00 00 00 00 00	208-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
\$D8-	00 00 00 00 00 00 00 00	216-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
\$E0-	00 00 00 00 00 00 00 00	224-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
\$E8-	00 00 00 00 00 00 00 00	232-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
\$F0-	00 00 00 00 00 00 00 00	240-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
\$F8-	00 00 00 00 00 00 00 00	248-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 1. The VTOC on a new disk.

Byte 53 (\$35) tells DOS to look for sixteen (\$10) sectors per track. Bytes 54-55 (\$36-37) report the number of bytes per sector (in lo/hi hex notation—\$0100 or 256 bytes).

The bytes below the dotted line tell DOS which sectors of which track are used and which are free. Each group of four bytes designates the free sectors of the next consecutive track in the form of a "bit map":

Bytes 56-59 (\$38-\$3B) show free sectors in track 0.

Bytes 60-63 (\$3C-\$3F) show free sectors in track 1.

Bytes 64-67 (\$40-\$43) show free sectors in track 2.

Bytes 68-71 (\$44-\$47) show free sectors in track 3.

Bytes 72-75 (\$48-\$4B) show free sectors in track 4.

And so on for the whole disk, up to ...

Bytes 188-191 (\$BC-\$BF) show free sectors in track 33 (\$21).

Bytes 192-195 (\$C0-\$C3) show free sectors in track 34 (\$22).

Bytes 196-255 (\$C4-\$FF) are unused.

For an explanation of how to read these free-sector bit maps, see page 4-3 of *Beneath Apple DOS*. For our purposes here, you only need to know that:

255 255 0 0 (\$FF \$FF \$00 \$00) means that *all* sectors on a track are free, and ...

0 0 0 0 (\$00 \$00 \$00 \$00) means that *no* sectors on a track are free.

From the example shown above, you can see that tracks 0, 1, and 2, represented by all zeros (bytes 56-67), are full. So is track 17, the catalog sector (zeros in bytes 124-127). Track 18 (63 255 0 0 in bytes 128-131) is partially used by our hello program, written onto the disk when we initialized it.

All we need to do to free up the sectors used by DOS is poke in some 255s at bytes 56 and 57 (track 0), 60 and 61 (track 1), and 64 and 65 (track 2). Due, however, to a quirk in the way DOS designates deleted files, we are unable to free up track 0, so forget bytes 56 and 57. This means we can create 32 more sectors of usable disk space, raising our total from 496 to 528 sectors.

Running the *DOS-Killer* program below will free tracks 1 and 2 for disk storage by reading track 1, sector 0, into memory; poking 255s into bytes 60, 61, 64, and 65; and then writing track 1, sector 0, back to the disk. Now the DOS in memory will allow programs to be saved or written over the DOS on the disk, making it unbootable. You might notice that the disk *will* boot at first, because nothing has overwritten DOS yet. But sooner or later, as you write more files on the disk, forget booting.

Warning: Back up your disks before subjecting them to this utility.
You might be glad you did.

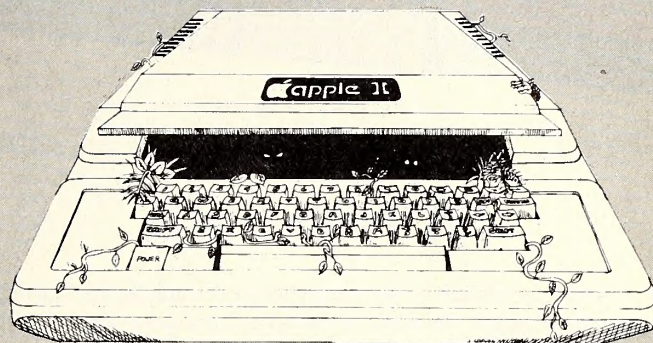
```

100 REM DOS-KILLER
101 REM BY BERT KERSEY
102 REM
110 TEXT : HOME
120 PRINT "DOS-KILLER": PRINT "-": PRINT : PRINT
  "FREES 32 SECTORS FOR AN ADDITIONAL 6%": PRINT "OF
  STORAGE, MAKING THE DISK UNBOOTABLE": PRINT "ONCE
  A PROGRAM HAS OVERWRITTEN DOS."
140 PRINT : PRINT "INSERT DISK AND PRESS RETURN:": GET AS$:
  IF AS$ < > CHR$(13) THEN 260
160 POKE 47084,17: POKE 47085,0: REM SELECT TRACK 17,
  SECTOR 0
170 POKE 47083,0: POKE 47091,0
180 LOC = 10000: POKE 47088,LOC - INT(LOC / 256) * 256:
  POKE 47089,INT(LOC / 256): REM STORE DATA AT
  LOCATION 10000
190 POKE 768,32: POKE 769,227: POKE 770,3: POKE 771,76:
  POKE 772,217: POKE 773,3: REM ROUTINE FOR JUMP TO
  RWTS
210 POKE 47092,1: CALL 768: REM READ SECTOR
220 POKE LOC + 60,255: POKE LOC + 61,255: POKE LOC +
  64,255: POKE LOC + 65,255: REM REWRITE 4 BYTES
230 POKE 47092,2: CALL 768: REM WRITE SECTOR
240 VTAB 3: PRINT : CALL - 958
250 PRINT : PRINT "DONE.": PRINT : PRINT "UPDATE ANOTHER
  DISK? (Y/N)": GET AS$: IF AS$ = "Y" THEN RUN
260 VTAB 20: END

```

To Softalk's and Bert Kersey's regret, this is the last Kersey *DOSTalk*. Sophie the beagle simply refuses to abstain from sleep any longer. You can read more of Kersey's inimitable prose in the Beagle Bros Apple Tip Book.

IT'S A JUNGLE IN THERE.



There's an untamed jungle inside your Apple II, lurking behind the facade of familiar Applesoft Basic. A place populated by unfriendly natives like carry flags, binary numbers, and indirect addressing modes. Where the only laws are the complex and mysterious ways of the 6502 microprocessor.

For years Apple owners trying to learn 6502 machine language had a tough time in this jungle, forced to hack their way through one slippery new concept after another.

Now there's an easier path through the machine language jungle. A path that anyone comfortable with Basic can follow.

The Visible Computer: 6502 is a unique new program that teaches machine language programming. It combines a hi-res 6502 simulation with an extensive user manual/tutorial to provide the easiest way yet to come up to speed on machine language.

The Visible Computer is like a microscope that lets you see inside a 6502 as it executes programs. You'll watch the registers change as instructions are performed. You'll see how instructions are executed -- not just their results. You control how fast or slow TVC runs. And it can't crash, no matter what.

Once you've earned your stripes as a machine language programmer, you can use TVC as a powerful debugging tool, with features veteran programmers appreciate, like: **On-line 4 function calculator; single step and 6502 modes; disassembler; flexible register and memory display.**

Requires 48K Apple II Plus with one drive:

The Visible Computer: 6502™

\$49.95 at better software dealers everywhere.

Or order directly. Personal Check / Money Order / MC-Visa accepted.

Please add \$3.00 for postage and handling.

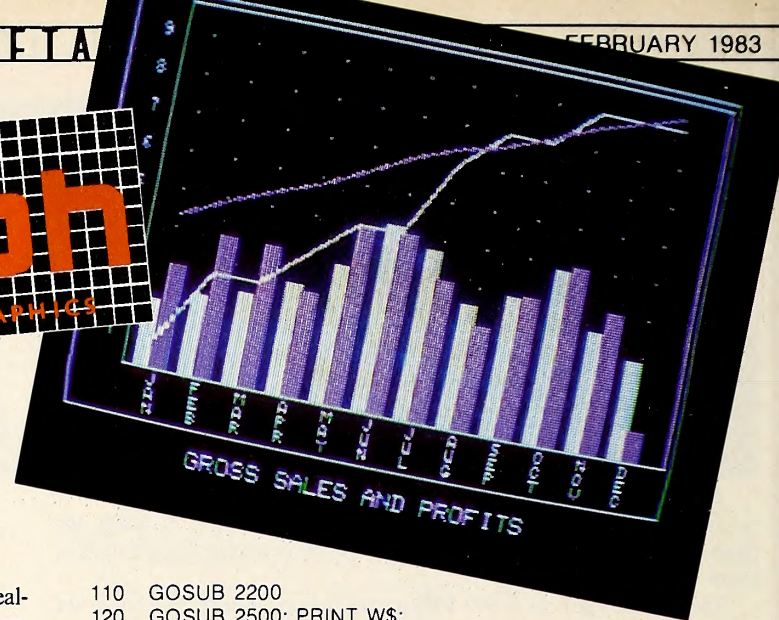
Software Masters™

3330 HILLCROFT, SUITE BB
HOUSTON, TEXAS 77057
(713) 266-5771

Apple II and Applesoft are trademarks of Apple Computer Inc.

SoftGraph

DO IT YOURSELF BUSINESS GRAPHICS



Part 2: Data Handling and System Control

BY DAVID DURKEE

Next time you hear, "Easy as Apple pie," think again. Creating really delicious Apple pie charts, at least, is less simple than might be expected—or, to be more specific, more lengthy.

Fact is, before we can make an intelligible graph, we have to have intelligible data. So the pie chart program promised for this month won't arrive until next month (the easy-as-pie pun moratorium will be similarly deferred). In the meantime, we'll tackle the preliminary necessity of creating a good data editor. You'll be busy typing until then anyway—but you'll get a much nicer pie chart, and line and bar charts, in the end.

The *Data Editor* allows you to create and edit data on a single text screen where you can see it all at one time. This necessitates certain limitations on the amount of data that can be presented, but the data fields are arranged in such a way that the editor won't introduce many limitations that aren't inherent in the charts themselves.

For instance, the *Data Editor* organizes things in five columns of eighteen rows. Each column is eight characters wide, so no number greater than 99,999,999 (without the commas) is possible. If you want to chart trends involving numbers in the billions in one column, it is easy enough to label the column "millions" and enter numbers like 1,000 (meaning one thousand millions, or one billion). You'd still get more than 100 million different possible values (including negative numbers and nonintegers), more distinction than the Apple can display or the eye can comprehend.

The left-hand column of the *Data Editor* is called the X field, so named for the X axis labels it holds for line and bar charts. The X field also holds labels for the slices of pie charts. You can type in the labels for pie charts or automatically generate a range of numbers, months, or days for bar and line charts.

The top two rows are for legends. The pie chart generator can graph only one column at a time, so the words in the legend box will be printed at the top of the chart. Bar and line charts will be able to read and display as many as four sets of data at a time, provided they all use the same values in the X field. The legend boxes will be treated as labels for each line or set of related bars.

That leaves eighteen rows for data. This was selected as a reasonable limit because, given the Apple's resolution, any kind of chart would get crowded if more data fields were allowed. In a chart of sales or profits over a period of time, you can graph eighteen months. That's a year and a half at a glance.

Enough of whys and wherefores; on to more meaty matters. Here's the program, one routine at a time.

```
10 DL = 25056:EL = 25856: REM DATA LOCATION
20 TEXT : HOME : HTAB 6: INVERSE
30 PRINT "**** SOFTGRAPH DATA EDITOR ****"
40 GOTO 1800
50 NORMAL
60 POKE 34,1
70 DL$ = CHR$(32) + CHR$(8)
80 GOSUB 2100
90 VF = 1:HF = 1
100 GOSUB 2000
```

```
110 GOSUB 2200
120 GOSUB 2500: PRINT W$;
```

Lines 10 through 120 are initialization. We'll wait until later to go over all the subroutines called. DL and EL hold the addresses in memory for the beginning and end of data. DL\$, defined in line 70, is a deletion character that we'll use in several input routines. It is a space followed by a backspace. When printed, DL\$ has the effect of erasing the character under the cursor without moving the cursor. VF and HF stand for vertical field and horizontal field, respectively. They keep track of which data field is being edited.

```
130 GET A$:A = ASC (A$)
140 IF A < 32 THEN 200
150 IF LEN (W$) = 8 THEN PRINT CHR$(7);: GOTO 130
160 W$ = W$ + A$: GOSUB 2200: PRINT W$;
170 GOTO 130
```

These lines are the program's main input loop. Instead of using the input command, we build a string by getting A\$ and adding it to an existing W\$. W\$ will always hold the word (or number) in the data field at location HF,VF. With the get-type input routine, we can limit the number of characters in the field (line 150) and keep an eye out for control characters (line 140), which the program interprets as commands.

```
200 REM CONTROL COMMAND HANDLER
210 IF A = 8 THEN 1100
220 IF A = 21 THEN 1200
230 GOSUB 2700
240 IF A = 24 THEN 600
250 IF A = 12 THEN 400
260 IF A = 3 THEN GOSUB 2000: GOTO 110
270 IF A = 17 THEN 1000
280 IF A > 8 AND A < 14 THEN 1300
290 IF A = 4 THEN 1500
300 IF A = 1 THEN 1600
310 GOTO 130
```

If the user enters a control character, the program goes to this routine. These are the possible values for A that the program will react to:

If A is 8 or 21, then an arrow key has been pressed. If it isn't, the gosub in line 230 moves the word from temporary storage in W\$ to its permanent location in memory.

A 24 means control-X has been pressed and control goes to the X field builder routine. A 12 indicates control-L, which calls the legend editor. This is the only way to put labels at the tops of the columns, as normal cursor movement in the program doesn't go up that far.

If A is 3, then control-C has been pressed. This indicates to the program that you wish to clear the entire data area to spaces.

A value of 17 indicates a control-Q. *Data Editor* understands this to mean you want to quit and go to the main menu program.

Line 280 looks for a range of numbers from 9 to 13. As we've already "filtered out" control-Ls in line 250, this accepts the control keys I, J, K, or M. These entries allow you to move the cursor about in the various data fields.

The last two possibilities are control-D and control-A, which stand

for delete and add. These routines allow for deleting or adding an entire row of data quickly. The delete routine takes out a row and moves all the subsequent rows up to fill the gap. Add does the opposite, inserting a blank row and moving all the following rows down one. Any data on the bottom row will be lost when you add a row in the middle.

By the way, a line at the bottom of the screen will prompt you as to what the control commands are, but it won't tell you what they mean. Don't be afraid to press one you're not sure of, as the program will always ask you to confirm any command that could be destructive.

```

400 REM LEGEND EDITOR
410 FOR L = 1 TO 4
420 L$ = ""
430 VTAB 24: HTAB 1: NORMAL
440 PRINT "INPUT LEGEND ";L$;"": INVERSE : PRINT SPC( 16)::
    HTAB 16
450 GET A$: IF A$ = CHR$( 8) AND LEN (L$) < 2 THEN L$ = ""::
    HTAB 16: PRINT DL$:: GOTO 450
460 IF A$ = CHR$( 8) THEN L$ = LEFT$ (L$, LEN (L$) - 1): PRINT
    A$:DL$:: GOTO 450
470 IF A$ = CHR$( 13) THEN 510
480 IF LEN (L$) = 16 THEN PRINT CHR$( 7):: GOTO 450
490 IF ASC (A$) > 31 THEN PRINT A$:L$ = L$ + A$
500 GOTO 450
510 NORMAL : IF L$ = "" THEN 560
520 L$ = LEFT$ (L$ + " ",16): REM 15 SPACES
530 IF L = 1 OR L = 3 THEN INVERSE
540 VTAB 3: HTAB 1 + 8 * L:W$ = LEFT$ (L$,8): PRINT W$:HF = L
    + 1:VF = -1: GOSUB 2300
550 VTAB 4: HTAB 1 + 8 * L:W$ = RIGHT$ (L$,8): PRINT W$:HF =
    L + 1:VF = 0: GOSUB 2300
560 NEXT L
570 VTAB 24: HTAB 1: CALL -868
580 VF = 1:HF = 1: GOTO 110

```

At the bottom of the screen, the legend editor asks for input. It indicates the sixteen-character limit (each legend is displayed in two data fields) by printing a line of sixteen inverse spaces. This routine is like the main input routine except that it stops at sixteen characters instead of eight and only reacts to two control characters: backspace to delete is handled in line 460 and return, the CHR\$(13), is dealt with in line 470.

When you hit return, line 520 adds spaces to bring the string up to sixteen characters, divides the string in two, and goes to the subroutines that poke the values in memory and print the label on the screen. If you hit return without typing anything first, the routine skips those steps, leaving the previous labels alone.

Once the routine has cycled through the four legends, it returns you to the main input routine, with the cursor wherever it was when control-L was pressed.

```

600 REM X FIELD BUILDER
610 HOME : PRINT : PRINT "DEFINE X AXIS BY:"
620 PRINT : PRINT " 1. MONTHS"
630 PRINT " 2. DAYS"
640 PRINT " 3. RANGE OF NUMBERS"
650 PRINT " 4. EXIT"
660 VTAB 12: HTAB 1: PRINT "CHOOSE OPTION: ": GET A$
670 A = VAL (A$): IF A < 1 OR A > 4 THEN 660
680 ON A GOTO 710,700,840,690
690 HOME : GOSUB 2100: GOTO 110
700 U$ = "DAY":HN = 7:TD = 19:BD = 13: GOTO 720
710 U$ = "MONTH":TD = 12:BD = 1:HN = 12
720 HOME : PRINT
730 PRINT : PRINT "NUMBER OF ";U$:: INPUT "S? ":A$:NM = INT
    ( VAL (A$))
740 IF NM < 2 OR NM > 18 THEN PRINT : PRINT "CANNOT
    PROCESS ";NM;" ";U$;"S", CHR$( 7): GOTO 730
750 PRINT : PRINT "STARTING WITH ";U$:: INPUT " #":A$:SM =
    INT ( VAL (A$))
760 IF SM < 1 OR SM > HN THEN PRINT : PRINT "MUST BE FROM
    1 TO ";HN: CHR$( 7): GOTO 750
770 IF BD = 13 THEN SM = SM + 12
780 HF = 1: FOR VF = 1 TO 18
790 IF SM > TD THEN SM = BD
800 IF VF > NM THEN W$ = " ": GOTO 820
810 W$ = X$(SM)

```

```

820 GOSUB 2300:SM = SM + 1
830 NEXT VF:VF = 1: GOTO 690
840 HOME : PRINT
850 PRINT : INPUT "HOW MANY NUMBERS? ":A$:NM = INT ( VAL
    (A$)): IF NM < 2 OR NM > 18 THEN PRINT "CANNOT
    HANDLE ";NM;" NUMBERS": CHR$( 7): GOTO 850
860 PRINT : INPUT "STARTING NUMBER? ":A$:SM = VAL (A$)
870 PRINT : INPUT "INCREMENT BY? ":A$:IM = VAL (A$): IF IM = 0
    THEN PRINT "CANNOT INCREMENT BY 0": CHR$( 7): GOTO
    870
880 HF = 1: FOR VF = 1 TO 18
890 IF VF > NM THEN W$ = " ": GOTO 910
900 W$ = STR$ (SM): IF LEN (W$) > 8 THEN PRINT W$;" TOO
    LONG": CHR$( 7):W$ = LEFT$ (W$,8)
910 GOSUB 2300
920 SM = SM + IM
930 NEXT VF
940 VF = 1: GOTO 690

```

The X field builder saves you some typing if you want the X labels to be months, days, or a range of numbers. Lines 610 through 680 handle the options menu. Lines 700 and 710 set U\$ to the unit you requested (if it was months or days) to use in prompting you for more information. The lines following ask you how many months or days you want, limiting you to no more than eighteen and no fewer than two. The routine then asks you where you want to start. If your company's fiscal year begins in July, you would probably enter 7. The loop from 780 to 830 reads the values from the predefined array X\$(SM) and pokes them into memory. There is no need to call the printing routine in this case because the whole screen has to be redisplayed.

The routine for numbers begins at line 840. It is both simpler and more flexible than the one for months and days, in that it allows you to enter any starting number and any increment. It simply generates the numbers numerically and then translates them to strings with STR\$(SM) in line 900. If anything comes to more than eight characters, line 900 truncates it to the legal limit and warns you about it.

```

1000 REM EXIT ROUTINE
1010 NORMAL
1020 VTAB 24: HTAB 1: PRINT "QUIT TO MENU? ": GET A$: HTAB
    1: CALL -868: IF A$ = "N" THEN 1050
1030 IF A$ = "Y" THEN HOME : PRINT "INSERT PROGRAM DISK
    IN DRIVE 1": PRINT "AND HIT A KEY.": GET A$: PRINT :
    PRINT CHR$( 4):"RUN MENU,D1"
1040 GOTO 1020
1050 GOSUB 2200: GOSUB 2500: PRINT W$: GOTO 130

```

The exit routine is pretty straightforward. You might want to replace it with an end statement until you have the whole thing typed in and saved to disk.

```

1100 REM BACKSPACE
1110 IF W$ = "" THEN 130
1120 IF LEN (W$) = 1 THEN W$ = "": GOSUB 2200: PRINT DL$::
    GOTO 130
1130 W$ = LEFT$ (W$, LEN (W$) - 1)
1140 GOSUB 2200: PRINT W$:DL$:
1150 GOTO 130

```

This is the routine that deals with backspaces in the main input loop. Lines 1110 and 1120 handle the special cases of W\$ being zero or one character long. Line 1130 removes the last character from the string, and 1140 prints the string. Note the use of DL\$ in line 1140.

```

1200 REM FOREARROW
1210 A$ = CHR$( PEEK (DL + 40 * (VF + 1) + 8 * (HF - 1) + LEN
    (W$)))
1220 GOTO 150

```

This routine handles the forward arrow. If you just backspaced over something and want it back, it will still be in memory if you haven't moved the cursor into another field in the meantime. The lovely equation in line 1210 computes the item's location, digs it out, and sends it back to the main input routine where it will be reattached to W\$.

```

1300 REM CURSOR MOVE
1310 ON A - 8 GOTO 1330,1350,1370,130,1390
1320 GOTO 130

```



```

1330 VF = VF - 1: IF VF = 0 THEN VF = 18
1340 GOTO 110
1350 HF = HF - 1: IF HF = 0 THEN HF = 5
1360 GOTO 110
1370 HF = HF + 1: IF HF = 6 THEN HF = 1
1380 GOTO 110
1390 VF = VF + 1: IF VF = 19 THEN VF = 1
1400 GOTO 110

```

This routine handles cursor moves from one field to another. The four possibilities are the control letters I, J, K, and M. Line 1310 sorts these out and goes to the appropriate line to change the value of HF or VF.

```

1500 REM DELETE A LINE
1510 HF = 1: GOSUB 2200
1520 GOSUB 2500: INVERSE : PRINT W$; SPC( 8 - LEN (W$));:
NORMAL
1530 VTAB 24: HTAB 1: PRINT "DELETE THIS LINE? "; GET A$;
HTAB 1: CALL -868: IF A$ = "Y" THEN 1550
1540 GOSUB 2200: PRINT W$; SPC( 8 - LEN (W$));: GOTO 110
1550 RL = DL + 40 * (VF + 1)
1560 POKE 236, INT (RL / 256)
1570 POKE 235, RL - 256 * PEEK (236)
1580 CALL 25982: V = VF: H = HF
1590 GOSUB 2100: VF = V: HF = H: GOTO 110

```

This is the first of four routines that call machine language routines. For that reason it won't work until those routines are in memory. We'll cover all the machine language routines later on in this article.

Lines 1520 and 1530 give you a prompt at the bottom of the screen to make sure you want to delete the line indicated. Line 1550 calculates the location of the first byte to be deleted, and lines 1560 and 1570 put that location in the place in memory where the machine language routine will look for it.

```

1600 REM ADD A LINE
1610 HF = 1: GOSUB 2200
1620 GOSUB 2500: INVERSE : PRINT W$; SPC( 8 - LEN (W$));:
NORMAL
1630 VTAB 24: HTAB 1: PRINT "ADD A LINE HERE? "; GET A$;
HTAB 1: CALL -868: IF A$ = "Y" THEN 1650
1640 GOSUB 2200: PRINT W$; SPC( 8 - LEN (W$));: GOTO 110
1650 RL = DL + 40 * (VF + 1) - 1
1660 POKE 238, INT (RL / 256)
1670 POKE 237, RL - 256 * PEEK (238)
1680 CALL 26023
1690 V = VF: H = HF
1700 GOSUB 2100: VF = V: HF = H: GOTO 110

```

The add-a-line routine works in pretty much the same way as the delete-a-line routine. The location of the first byte of memory where the line will be added is calculated in 1650 and poked in 1660 and 1670.

```

1800 REM X AXIS OPTIONS INIT
1810 DIM X$(19)
1820 FOR X = 1 TO 19: READ X$(X): NEXT X: GOTO 50
1830 DATA JAN,FEB,MAR,APR,MAY,JUN
1840 DATA JUL,AUG,SEP,OCT,NOV,DEC
1850 DATA SUN,MON,TUE,WED,THU,FRI,SAT

```

Lines 1800 through 1850 set up the X\$(19) array that holds the potential X field labels. With a little modification to this routine and the one starting at line 600, you could set the *Data Editor* up to allow any kind of range to be inserted into the X field with control-X.

```

2000 REM INITIALIZE DATA
2010 NORMAL : VTAB 24: HTAB 1: PRINT "CLEAR DATA? "; GET
A$: HTAB 1: CALL -868: IF A$ = "Y" THEN 2030
2020 RETURN
2030 CALL 25955
2040 W$ = "LEGENDS:"
2050 PL = DL - 1: GOSUB 2330

```

This routine wipes out any data in memory. Line 2010 is a prompt to make sure you really want to do that. The call to 25955 requires no parameters to be poked in as it always clears the whole data area. Lines 2040 and 2050 put the string *legends:* in the top left corner of the screen

to remind you that the top two rows are labels and not data.

```

2100 REM DISPLAY SCREEN
2110 CALL 25862
2120 VTAB 23: HTAB 1: PRINT "COMMANDS: CONTROL-I,J,K,M,
L,X,Q,D,A,C";
2130 VF = 1: RETURN

```

This routine displays the screen with a call to 25862. Again, no parameters are required. Line 2120 prints the control command prompt at the bottom of the screen.

```

2200 REM PLACE CURSOR
2210 VTAB VF + 4: HTAB 8 * (HF - 1) + 1
2220 NORMAL : IF HF / 2 = INT (HF / 2) THEN INVERSE
2230 RETURN

```

This routine is called frequently throughout the program. It takes the values VF and HF and moves the cursor to the proper location. Every other column is printed in inverse to keep adjacent fields separate, so if HF is an even number (that is, 2 or 4) line 2220 turns on inverse mode.

```

2300 REM POKE IN WORD
2310 PL = DL + 40 * (VF + 1) + 8 * (HF - 1) - 1
2320 IF W$ = "" THEN 2370
2330 FOR LOC = 1 TO LEN (W$)
2340 POKE PL + LOC, ASC ( MID$ (W$,LOC,1))
2350 NEXT LOC
2360 IF LEN (W$) = 8 THEN 2400
2370 FOR LOC = LEN (W$) + 1 TO 8
2380 POKE PL + LOC, 32
2390 NEXT LOC
2400 RETURN

```

Lines 2300 through 2400 poke the word in W\$ into memory. The input routine doesn't constantly update memory. Instead, this routine is invoked whenever a control command is given. Line 2310 determines the memory location (again, based on the values of HF and VF) and lines 2330 through 2350 cycle through the word one character at a time, poking the ASCII values into memory. The loop in 2370 to 2390 puts spaces in the remaining bytes if the word is shorter than eight characters.

```

2500 REM READ WORD
2510 PL = DL + 40 * (VF + 1) + 8 * (HF - 1) - 1
2520 WL = 0: W$ = ""
2530 FOR LOC = 8 TO 1 STEP - 1
2540 IF PEEK (PL + LOC) > 32 THEN WL = LOC: LOC = 1
2550 NEXT LOC
2560 IF WL = 0 THEN RETURN
2570 FOR LOC = 1 TO WL
2580 W$ = W$ + CHR$ ( PEEK (PL + LOC))
2590 NEXT LOC
2600 RETURN

```

The read-word routine does the opposite of the write-word routine. When the cursor is moved to a new position, this routine reads the word that is in memory there and puts it into W\$. Line 2510 finds the correct memory location. Lines 2530 to 2550 read backward from the end of the field, looking for the last nonspace character. Then lines 2560 through 2590 read everything up to that character into W\$.

```

2700 REM INSERT WORD
2710 GOSUB 2200: PRINT W$;
2720 IF LEN (W$) = 8 THEN 2740
2730 PRINT SPC( 8 - LEN (W$));: GOSUB 2200: PRINT W$;
2740 GOSUB 2300
2750 RETURN

```

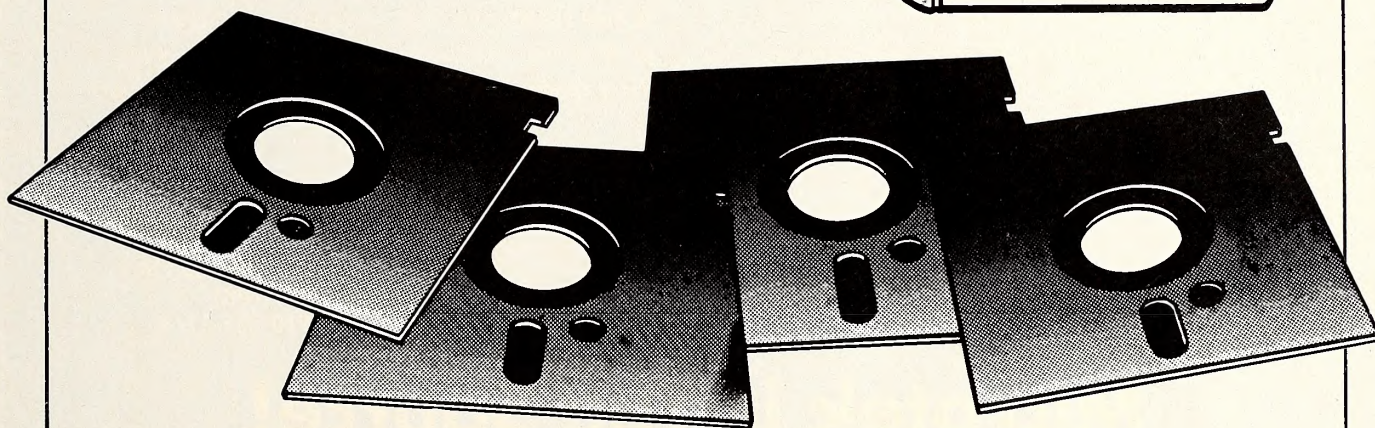
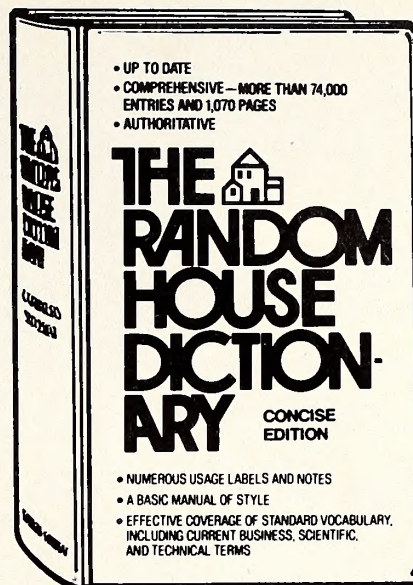
Finally, this routine handles the necessary housekeeping when the cursor is moved: placing the cursor, printing the word, and poking it into memory.

Now let's talk about the machine language routines. The original version of this program had these routines in Basic and they worked but they were slow. Rather than compile the whole program, which makes it difficult to modify later, it's better to speed up the slow poke routines (that's slow-poke routines, not slow poke-routines) by writing them in assembly language.

The program pokes data directly into memory instead of using a string array so that the data can be easily passed on to other programs or

The Sensible Speller...

what a spelling verification program should be!



You get 85,000 words on disk with THE SENSIBLE SPELLER and a Random House dictionary to boot!

THE SENSIBLE SPELLER™ is the first COMPLETE spelling verification program for the Apple Computer. NO other spelling program includes as many options, or has a dictionary (on diskette) as large as ours, and includes a well known dictionary, too. THE SENSIBLE SPELLER now features the complete CONCISE EDITION of the RANDOM HOUSE® DICTIONARY. If you question the definition, pronunciation, or spelling of any word, you can simply look it up in the supplied hardcover dictionary.

Four versions of THE SENSIBLE SPELLER are available. There is no need to MUFFIN or transfer your files from one operating system to another.

- The **DOS 3.3 version** works with Applewriter (I or II), Apple Pie, The Correspondent, Executive Secretary, Letter Perfect, Magic Window, Screenwriter (formerly Superscribe), Text Editor, TXT/ED, Write-On, Word Power, or any other word processor, editor, or program that generates standard DOS 3.3 TEXT or BINARY files.

- The **Super Text™ version** works with Super Text, Super Text II, and the new 80-column version of Super Text.
- The **CP/M™ version** works with WordStar, ED, Type Master, and any other word processor that does not compact text.
- The **Pascal™ version** works with the Pascal Editor, and Prose.

Numerous options are provided throughout the program to enable you to completely control all activities of THE SENSIBLE SPELLER. These include the ability to ignore both formatting commands and control codes, multiple options for the action taken with each misspelled word, and the use of multiple dictionaries. An alphabetical listing of misspelled, unknown, and/or all words in your document along with usage frequencies may be listed. A verification mode is provided to allow you to examine and dispense with misspelled words while viewing them in the actual context in which they appeared in your file. When you encounter an unknown word, you can even search the dictionary for the correct spelling (using wildcards). In the near future, Sensible Software will be releasing well known legal and medical dictionaries to complete this professional package.

THE SENSIBLE SPELLER package includes:

- an easy to read instruction manual
- two copies of THE SENSIBLE SPELLER program
- a main dictionary diskette, containing 45,000 of the most commonly used English language words (there is room to add approximately 10,000 of your own words)
- a supplementary dictionary diskette, containing the remaining 40,000 words in the CONCISE EDITION of the RANDOM HOUSE DICTIONARY
- the hard cover RANDOM HOUSE DICTIONARY, CONCISE EDITION

THE SENSIBLE SPELLER requires an Apple™ II/Apple™ II+ equipped with 48K, DOS 3.3, and 1 or 2 disk drives. Two disk drives are required to delete or add words to the dictionary. The price is only \$125.00.



6619 Perham Drive,
West Bloomfield, Michigan 48033
(313) 399-8877
Visa and Mastercard Welcome.
Add \$1.25 postage and handling per program.
For a complete catalog, send
\$1.00, refundable with your first purchase.

• APPLE is a registered trademark of APPLE Computer Company • CP/M is a registered trademark of Digital Research Corp. •
• SUPER TEXT is a registered trademark of Muse Software • APPLE PASCAL is a registered trademark of U.C.S.D. •

RANDOM HOUSE and the House design are registered trademarks of Random House, Inc. Copyright 1982 Random House, Inc.

If you deal with computers, then Microtek has something for you. Microtek is the time-proven industry standard second source manufacturer for microcomputer peripherals. We offer an unparalleled selection of hardware and software support for your every need.

Microtek Computer Products for Apple and Franklin Computers.

DUMPLING-GX

Hi-Resolution Graphics Parallel Printer Interface Card with graphics features.

DUMPLING-64

64K Spooler Buffer for Text, Block and Dot Addressable Graphics.

Both **DUMPLINGS** have Rotation, Inversion, Emphasized Mode, Dual Page Dump and a myriad of graphics manipulation routines. The **DUMPLING-64** includes Space Compression, Pause immediate, Pause delayed, Insert Editing for text and more than 2 dozen control codes for text and graphics storage and output.

One version of each **DUMPLING** works with most major graphics printers!

BAM-16MM 16K Memory Card with MMS (includes MOVE-DOS).

MAGNUM-80 80 column Video Board
Q-DISC Self-contained 128K Disc Emulation. Firmware for Self-Test, DOS facilities and supplied with Visicalc Expansion Software.

RAINBOW-256 RGB Driver with 256 colors.

RV-611C
BAM-128

7 or 8 Bit Parallel Interface Card.
64K or 128K Memory supplied with Visicalc Expansion Software.

The IBM P.C.

HAL-64, 128, 192, 256 Memory Expansion with and without Parity.

The **HAL** Parallel Printer Cable.

Disc emulation and Printer Spooler Software for the **HAL** series or ANY IBM compatible memory card.

Atari 400 & 800 Computers

AMB-16 16K Memory Card.
AMB-32A 32K Slot Independent Memory Card.
ATC-P Parallel Printer Cable.
ATC-S Serial or Modem Cable.

Commodore Products for the VIC-20

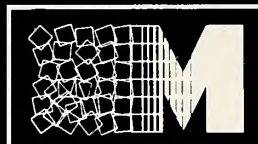
VIM-16 16K Memory Expansion Module.
VIM-8 8K Memory Expansion Module.
VIM-0 EPROM/RAM User Definable Module.

Miscellaneous

SCAMP SERIES—RS-232C Serial Interface Cables.

All Microtek products carry a 2 Year Warranty.

Micro Spooler III & IV—Stand-alone printer spoolers with serial/parallel conversion and 256K memory.



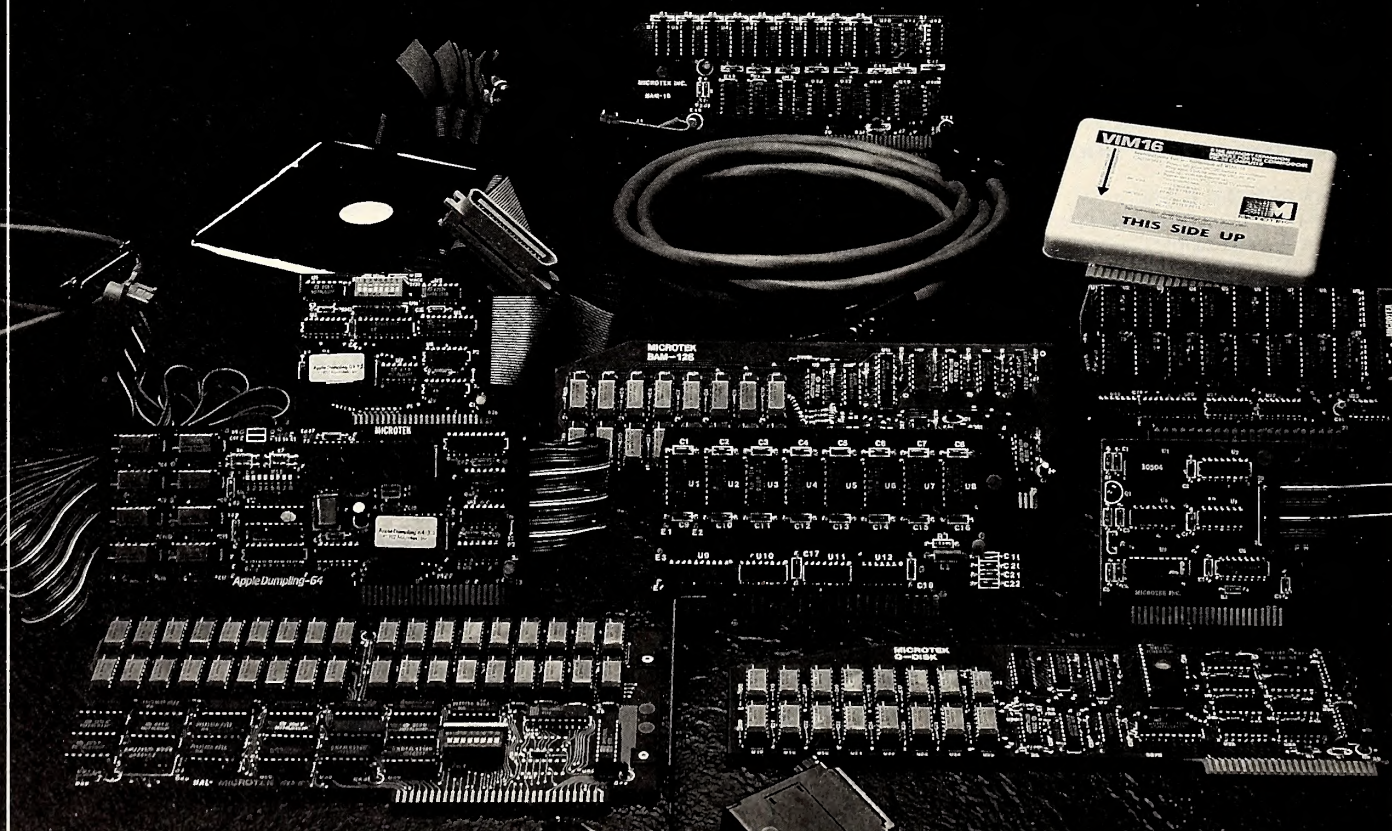
MICROTEK Inc.

9514 Chesapeake Drive
San Diego, CA 92123
(619) 569-0900

Toll Free Outside CA
(800) 854-1081
TWX. 910-335-1269

©Microtek, 1982

Microtek is The Source!



Dumpling is a trademark of Microtek Inc.
Apple is a registered trademark of Apple Computer Inc.

CP/M is a registered trademark of Digital Equipment Corp.
Visi-Calc is a registered trademark of Visi-Corp.

stored as a binary file. As a result, we can easily manipulate the data from machine language.

```

1 *****
2 *
3 *           Editor Machine
4 *           Language Routines
5 *
6 *****
7 ORG 25862
8 COLUMN EQU 25859
9 ROW EQU 25858
10 LOC EQU 235
11 LOCHI EQU 236
12 LOC2 EQU 237
13 LOC2HI EQU 238
14 CV EQU 37
15 CH EQU 36
16 INVFLG EQU 50
17 COUT1 EQU $FDF0
18 VTAB EQU $FC22
19 *****
20 *
21 *           Display Screen Routine
22 *
23 *****
6506: A9 01 24 LDA #1 ;First row
6508: 8D 02 65 25 STA ROW
650B: A9 00 26 LDA #0 ;Place cursor
650D: 85 24 27 STA CH
650F: A9 02 28 LDA #2
6511: 85 25 29 STA CV
6513: 20 22 FC 30 JSR VTAB
6516: A9 D8 31 LDA #$D8 ;Set memory
                               pointer
6518: 85 EB 32 STA LOC
651A: A9 61 33 LDA #$61
651C: 85 EC 34 STA LOCHI
651E: A9 01 35 NEWROW LDA #1
6520: 8D 03 65 36 STA COLUMN
    
```

```

6523: A9 01 37 NEWCOL LDA #1
6525: 2D 03 65 38 AND COLUMN ;Is column odd?
6528: D0 07 39 BNE NORM
652A: A9 3F 40 LDA #$3F ;Inverse
652C: 85 32 41 STA INVFLG
652E: 4C 35 65 42 JMP INCLOC
6531: A9 FF 43 NORM LDA #$FF ;Normal
6533: 85 32 44 STA INVFLG
6535: 18 45 INCLOC CLC ;Update memory
                               pointer
6536: A5 EB 46 LDA LOC
6538: 69 08 47 ADC #8
653A: 85 EB 48 STA LOC
653C: 90 02 49 BCC CELL
653E: E6 EC 50 INC LOCHI
6540: A0 00 51 CELL LDY ;Print eight
PRINT LDA (LOC),Y ;character cell
6542: B1 EB 52 ORA #$80
6544: 09 80 53 JSR COUT1
6546: 20 F0 FD 54 INY ;Next character
6549: C8 55 CPY #8
654A: C0 08 56 BNE PRINT
654C: D0 F4 57 INC COLUMN ;Next column
654E: EE 03 65 58 LDA COLUMN
6551: AD 03 65 59 CMP #6
6554: C9 06 60 BNE NEWCOL
6556: D0 CB 61 INC ROW ;Next row
6558: EE 02 65 62 LDA ROW
655B: AD 02 65 63 CMP #21
655E: C9 15 64 BNE NEWROW
6560: D0 BC 65 RTS
6562: 60 66
67 *****
68 *
69 *           Clear Data Routine
70 *
71 *****
6563: A9 E0 72 CLEAR LDA #$E0 ;Start location
6565: 85 EB 73 STA LOC
6567: A9 61 74 LDA #$61
6569: 85 EC 75 STA LOCHI
    
```

Did You Hear the One About the Computer That Talks?

It's no joke.

With the ECHO speech synthesizer from Street Electronics whatever you type on the keyboard, your computer can say. The ECHO's text-to-speech system gives your computer an unlimited vocabulary while using a minimum of memory. And now a diskette of fixed, natural sounding words is available to enhance the ECHO II's voice output.

Nearly 400 language rules are contained in the ECHO's text-to-speech algorithm. These rules enable the computer to pronounce most correctly spelled words. When in the text-to-speech mode the user can select any of 63 different pitch levels, and have words spoken either monotonically or with intonation by using simple control character sequences. The rate of speech can be fast or slow; words can be spoken in their entirety or spelled letter by letter. The ECHO's also pronounce punctuation and numbers. Words can be encoded using phonemes and diphthongs when the text-to-speech or fixed vocabulary is not required.

Applications are unlimited, ranging from phone answering, educational and training programs, to games and aiding the sight and speech impaired. The ECHO is a complete stand alone unit which is compatible with most any computer; it sells for \$299.95. The ECHO II, which plugs into the Apple II, is priced at \$149.95.

Street Electronics Corporation
1140 Mark Avenue, Carpinteria, CA 93013
Telephone (805) 684-4593



Call toll free for demonstration (800) 221-0339


```

656B: A9 20 76 START LDA #32 ;Space character
656D: A0 00 77 LDY #0
656F: 91 EB 78 LOOP STA (LOC),Y
6571: E6 EB 79 INC LOC
6573: D0 FA 80 BNE LOOP
6575: E6 EC 81 INC LOCHI
6577: A9 65 82 LDA #$65 ;Is it the
6579: C5 EC 83 CMP LOCHI ;last location?
657B: D0 EE 84 BNE START
657D: 60 85 RTS
86 *****
87 *
88 * Delete A Line Routine *
89 *
90 *****
657E: A9 D8 91 CHKLOC LDA #$D8 ;Is this last line?
6580: C5 EB 92 CMP LOC
6582: D0 06 93 BNE MOVE
6584: A9 64 94 LDA #$64
6586: C5 EC 95 CMP LOCHI
6588: F0 11 96 BEQ LASTLN ;If so, go to
658A: A0 28 97 MOVE LDY #40 ;Move data
658C: B1 EB 98 LDA (LOC),Y ;back 40 spaces
658E: A0 00 99 LDY #0
6590: 91 EB 100 STA (LOC),Y
6592: E6 EB 101 INC LOC ;Next location
6594: D0 E8 102 BNE CHKLOC
6596: E6 EC 103 INC LOCHI
6598: 4C 7E 65 104 JMP CHKLOC
659B: A0 00 105 LASTLN LDY #0 ;Fill last line
659D: A9 20 106 LDA #32 ;with spaces
659F: 91 EB 107 LOOP1 STA (LOC),Y
65A1: C8 108 INY
65A2: C0 28 109 CPY #40 ;Is this last byte?
65A4: D0 F9 110 BNE LOOP1 ;No
65A6: 60 111 RTS ;Yes
112 *****
113 *
114 * Add A Line Routine *
115 *
116 *****
65A7: A9 D7 117 ADDLINE LDA #$D7 ;Start location
65A9: 85 EB 118 STA LOC
65AB: A9 64 119 LDA #$64
65AD: 85 EC 120 STA LOCHI
65AF: A5 EB 121 CHKLOC2 LDA LOC ;Is this last location?
65B1: C5 ED 122 CMP LOC2
65B3: D0 06 123 BNE MOVE1
65B5: A5 EC 124 LDA LOCHI
65B7: C5 EE 125 CMP LOC2HI
65B9: F0 15 126 BEQ OPENLN ;Yes, go to openln
65BB: A0 00 127 MOVE1 LDY #0 ;No, move data
65BD: B1 EB 128 LDA (LOC),Y
65BF: A0 28 129 LDY #40
65C1: 91 EB 130 STA (LOC),Y ;Move forward 40
spaces
65C3: A5 EB 131 LDA LOC
65C5: C9 00 132 CMP #0
65C7: D0 02 133 BNE DECLOC
65C9: C6 EC 134 DEC LOCHI ;Go to previous
location
65CB: C6 EB 135 DECLOC DEC LOC
65CD: 4C AF 65 136 JMP CHKLOC2
65D0: A0 01 137 OPENLN LDY #1
65D2: A9 20 138 LDA #32
65D4: 91 EB 139 LOOP2 STA (LOC),Y ;Put spaces in line
65D6: C8 140 INY
65D7: C0 29 141 CPY #41 ;Is that last byte?
65D9: D0 F9 142 BNE LOOP2 ;No
65DB: 60 143 RTS ;Yes

```

There are two ways to enter these routines. The first number you see in the listing, 1, is an assembler line number. All the numbers in that column are line numbers. If you have an assembler, get into its editor and enter everything to the right of the line numbers. Most assemblers automatically number the lines, so you don't have to type the numbers in.

These routines were written on *Merlin* by Southwestern Data Systems. They should be compatible with most other assemblers. If your assembler has a limit on label length, you may have to shorten some of the

labels. Furthermore, some assemblers require that equates to zero page locations use a different pseudo op-code than EQU. If that is the case with yours, you will have to change lines 10 through 16.

Now, even if you don't have an assembler, you can still enjoy the speed of machine language. Type *call -151* to enter the Monitor. You will get an asterisk as a prompt. To enter the routine, enter everything in the listing that is to the left of the line numbers. The first line, for instance, is *6506: A9 01*. The first number, 6506, is the address you are entering the numbers in. Note that all these numbers are in hexadecimal. The address will be followed by one to three two-digit hexadecimal numbers—in this case, A9 and 01. Type them in exactly, separated by spaces as shown and followed by return. Don't type in the numbers in the line number column.

When you are done typing, check your work by typing *6506L*. This will list the first set of lines in partially disassembled form. That is, the numbers on the left will be the same as they are in the listing here, and the assembly language mnemonics (LDA in the first line you typed in) will be the same, but the labels will be replaced with the numbers they represent. Proofread your work against the left-hand column of numbers only. Type *L* to list the next section, and so on.

When you're done, type control-C and return to reenter Basic and save the code to disk with the command:

```
BSAVE EDITOR.ML,A$6506,L214
```

Now you're ready to run the program. When you're satisfied that it works, come back and we'll do two more short programs.

The first program is the *Menu*, which is used as the crossroads of the *SoftGraph* system. Whenever you quit another program, control goes to the *Menu*, from which you can move to another program. Putting all of the disk access into the *Menu* program avoids redundant load and save procedures. Disk access is handled through the disk submenu.

Here's the program:

```

10 DIM F$(20):D$ = CHR$(4)
20 ONERR GOTO 50
30 N = N + 1: READ F$(N):IF N < 20 THEN 30
40 NM = 20: POKE 216,0: GOTO 70
50 POKE 216,0:ER = PEEK(222):NM = N - 1
60 IF ER <> 42 THEN PRINT "ERROR #";ER: CHR$(7): END
70 TEXT : HOME
80 PRINT "SOFTGRAPH MAIN MENU PROGRAM"
90 PRINT
100 FOR N = 1 TO 20
110 IF F$(N) = "" THEN N = 20: GOTO 130
120 PRINT N: TAB(4);"— ";F$(N)
130 NEXT N
140 PRINT : INPUT "ENTER NUMBER OF CHOICE: ";N$
150 N = VAL(N$): IF N < 1 OR N > NM THEN VTAB 3: CALL -958:
GOTO 100
160 IF N > NM - 2 THEN 180
170 HOME : PRINT "INSERT PROGRAM DISK IN DRIVE 1": PRINT
"AND HIT A KEY.": GET A$: PRINT : PRINT CHR$(
4);"RUN";F$(N);",D1"
180 IF N = NM THEN HOME : END
190 REM DOS MENU
200 HOME : PRINT "SOFTGRAPH DISK OPTIONS MENU"
210 VTAB 4: HTAB 3: PRINT "1- LOAD A DATA FILE"
220 HTAB 3: PRINT "2- SAVE A DATA FILE"
230 HTAB 3: PRINT "3- LOAD A CHART"
240 HTAB 3: PRINT "4- SAVE A CHART"
250 HTAB 3: PRINT "5- VIEW THE HI-RES SCREEN"
260 HTAB 3: PRINT "6- CATALOG"
270 HTAB 3: PRINT "7- BACK TO MAIN MENU"
280 PRINT : INPUT "SELECT AN OPTION: ";N$
290 M = INT ( VAL (N$)): IF M < 1 OR M > 7 THEN 190
300 ON M GOTO 310,310,310,310,640,600,70
310 F$ = "": HOME : VTAB 8: PRINT "FILENAME (,S#,D#): ";
320 VTAB 8: HTAB 20: PRINT F$;: CALL -958: GET N$:N = ASC
(N$)
330 IF N = 8 THEN 370
340 IF N = 13 THEN 390
350 IF N < 32 THEN 320
360 F$ = F$ + N$: GOTO 320
370 IF LEN (F$) < 2 THEN F$ = "": GOTO 320
380 F$ = LEFT$(F$, LEN (F$) - 1): GOTO 320
390 IF F$ = "" THEN 190

```



```

400 ONERR GOTO 480
410 PRINT
420 PRINT D$;"VERIFY";F$
430 POKE 216,0
440 IF M = 1 OR M = 3 THEN 510
450 VTAB 10: HTAB 1: PRINT "OVERWRITE EXISTING FILE (Y OR
N)? ";: GET N$: IF N$ = "N" THEN 190
460 IF N$ <> "Y" THEN 450
470 PRINT : PRINT D$;"DELETE";F$: GOTO 510
480 POKE 216,0:ER = PEEK (222)
490 IF ER <> 6 THEN PRINT "DOS ERROR #";ER; CHR$(7);: GET
N$: GOTO 190
500 IF M = 1 OR M = 3 THEN PRINT "FILE NOT FOUND"; CHR$(
7);: GET N$: GOTO 190
510 ON M GOTO 520,540,560,580
520 PRINT D$;"BLOAD";F$
530 GOTO 190
540 PRINT D$;"BSAVE";F$;"",A25056,L800"
550 GOTO 190
560 PRINT D$;"BLOAD";F$;"",A16384"
570 GOTO 190
580 PRINT D$;"BSAVE";F$;"",A16384,L8192"
590 GOTO 190
600 PRINT : PRINT "CATALOG DRIVE #";: GET A$
610 HOME :N = VAL (A$): IF N < 1 OR N > 2 THEN N = 1
620 PRINT : PRINT D$;"CATALOG,D";N
630 GET A$: GOTO 190
640 POKE -16299,0: POKE -16302,0: POKE -16297,0: POKE
-16304,0
650 GET A$: TEXT : GOTO 190
1000 DATA DATA EDITOR,PIE CHART,BAR/LINE CHART
1090 DATA DISK MENU,QUIT

```

This program's error handling and the flexibility of the main menu are worth close examination. Line 20 sets an error flag and the lines that follow read data. When an "out of data" error is encountered, the program looks to see how many pieces of data have been read and determines that that is the number of items in the menu. This technique makes

it easy to add new program names as menu items later. Just add the new names to the data statements at the end of the program. The only restrictions are that only twenty pieces of data will be read, and the last two must be *disk menu* and *quit* for those functions to work.

The program also uses error handling in the disk access sequence. First of all, a verify command is used in line 420 to tell whether a file name already exists. The program handles this situation differently depending on whether it is loading or saving. If it is loading a file, it gives an error message to the user if the file doesn't exist. If it is saving, it notifies the user if the file does exist to avoid overwriting important data.

The last program this month starts up the system. Type it in and save it to a blank disk with the command *init hello*. Then transfer all your other *SofiGraph* programs to this disk.

```

10 TEXT : HOME
20 PRINT "GRAPHING PROJECT DISK--LOADING SHAPEFILE"
30 SL = 24576
40 POKE 233,INT (SL / 256): POKE 232,SL - (INT (SL / 256) * 256)
50 PRINT CHR$(4);"BLOAD SHAPEFILE,A";SL
60 PRINT CHR$(4);"BLOAD BLANKDATA"
70 PRINT CHR$(4);"BLOAD EDITOR.ML"
80 PRINT CHR$(4);"RUN MENU"

```

Briefly, Shapefile is the shape table file we created last month. Blank-data can be created by running the *Data Editor*, clearing the data (with control-C), going back to the menu (with control-Q), and saving Blank-data with the save-a-data-file option. This way, when you start from scratch you won't find garbage in the data field, as you did when you first ran the editor.

If you got some strange results from last month's SoftGraph shape tables, rest assured. The problem is not in your television set. Change line 10 in listing 2, Shape Table Test, and listing 4, Hi-Res Writer, to read:

```
10 HGR : HCOLOR = 3: SCALE = 1: ROT = 0
```

That's about it. Next month: pie charts. Honest.

QUICK & EASY DATA MASTER

A DATA BASE PROGRAM THAT YOU CAN MASTER

APPLE II • APPLE III • CPM \$69⁹⁵

Design and produce hundreds of software programs to your specifications using **Quick and Easy**. Simple to use - no programming required!

QUICK:

Produce your **custom** designed programs quick.

Typical design and production time:

Mail list - 10 minutes
Inventory - 1 hour
Invoice - 1 hour

- Entry & access to all the data that your computer will ever store.
- The data base is written in unprotected basic so it can be quickly and easily modified.
- Hard disk compatible with no changes.
- Quick search by multiple fields using separate ranges.

- No limit on the maximum number of records except disk space.
- Sorting is performed as data is entered.
- Simultaneous access and data transfer to multiple files.
- Use wild cards to search with.
- Over 100 math calculations possible per data base.

EASY:

Design and set up your application Quick and Easy.

Design your own forms. Design your own custom specifications. No programming required.

Business

- Inventory • Point of Sale • General Ledger • Accounts Receivable • Chart of Accounts • Personnel / Client Files • Floor Planning (Trace Serial #'s • Appointment Schedules • Medical Billing • Restaurant Control Package • Insurance Brokerage Package

Business Reports

- A/R Aging Report • Inventory Re-order Report • CUSTOM INVOICES • A/P Cash Requirement Report • Weekly Sales Log • Customer Account List • G/L Trail Balance • Inventory Status • Salesman Commission Report

School

- Grade Card Management • Library Management • Alumni Mail List and many more...

SPECIFICATIONS PER DATA FILE

Maximum Field Size: 245 Maximum Fields: 200
Maximum Calculations: 200 Maximum Record Size: 3,000
Typical Access Time Under 5 Seconds!

ADVANCED SOFTWARE TECHNOLOGY, INC.

7899 Mastin Drive, Overland Park, KS 66204

(913) 648-4442

Videx, a frontrunner in microcomputer peripherals and software, announces two exciting new programs that will make existing software compatible with the 80-column VIDEX VIDEOTERM.

APPLE WRITER][pre-boot with 80-Column Display

This program allows an 80-column display for your APPLE WRITER][, and access to true upper and lower case input from the keyboard. When combined with the ENHANCER][, this program will provide a complete word processing package.

Interested in word processing in different languages? The pre-boot program has been set up to allow APPLE WRITER][to prompt in other languages. With an Enhancer][, the keyboard can be programmed to be compatible with different languages.

\$19.00

Suggested retail price



VisiCalc™

pre-boot with 80-Column Display

Now you can view the VisiCalc electronic worksheet window in 80 columns. Since the entry line is also 80 columns wide, complex formulas can now be seen in their entirety for editing ease. An added bonus is the ability to display upper and lower case.

\$49.00

Suggested retail price

For those who need even more power, a more advanced version combines all the above features with the ability to use many of the memory expansion boards currently available. A configuration editor allows VisiCalc to use a mixture of different kinds of memory expansion cards. Just tell it what memory cards you have and which slots they are in. For example, you could use more than one language card equivalent. The memory cards can be combined to give you access up to 176 K of memory!

\$89.00

Suggested retail price



VENTURES WITH VISICALC

BY JOE SHELTON

Ever thought about investing in a company? Or purchasing stock? Ever been a manager responsible for the financial health of a company? Or known a banker who was looking at the financial records of a company? Or a college student who was taking classes in finance and accounting?

What all of these people have in common is a desire to be able to determine key indications of a company's financial strength by looking at that company's financial records. It shouldn't surprise you that *VisiCalc* can be the quickest and simplest means of obtaining these indices.

The first thing you need in order to do this kind of analysis is the financial records of the company that interests you. There are a number of ways to find this information. If you want to know more about a publicly held company, write to the company or see a stockbroker; you should be able to get that company's annual reports. In addition, all publicly held companies are required to file a 10K report with the Securities and Exchange Commission. This is a yearly summary of a company's financial position. You'll find 10K reports in many libraries, especially the graduate business school libraries of major colleges.

If the company you're curious about is privately held, obtaining financial information can be difficult or even impossible. You can try going directly to the company, but many private companies won't release financial information. Managers and potential investors need to be able to secure enough information to do cursory or even complete analysis.

Financial Ratios. If you've ever taken accounting or finance classes, the term *financial ratios* probably reminds you of frantic efforts to memorize masses of formulas. Once you completed your coursework, however, you probably rarely, if ever, saw or used any of the formulas again. Schools continue to teach financial ratio formulas, though; the reason is that a world of information can be gleaned from using them to analyze the financial status of a company. But because the process of determining the ratios is a repetitive and complicated task most people stop using these formulas once they finish school. Enter *VisiCalc*, the perfect tool for the job. (You knew that was coming!)

Before we see how *VisiCalc* can be used here, a short review of financial ratios is probably in order. At the simplest level, financial ratios are comparisons of various entries on different financial reports. The most commonly used reports are a company's income statement and its balance sheet.

Financial ratios can be classified in a number of ways. We'll separate them into four groups—liquidity ratios, activity ratios, leverage/equity ratios, and profitability ratios (figure 1).

Liquidity ratios are an indication of a company's solvency. They include net working capital, current ratio, and quick asset ratio. Liquidity ratios deal primarily with current and quick assets and with how these relate to current liabilities.

Activity ratios are an indication of how sales relate to specific assets. As the name implies, activity ratios show how busy (active) a company is. Activity ratios include inventory turnover, inventory as a percentage of assets, average collection period, fixed asset turnover, and total asset turnover.

Leverage/equity ratios are the relationships between debt and equity as they relate to total assets, total debt, preferred stock, common stock,

and bonds. Included in this category are total debt to total assets, net asset value per bond, net asset value per share of preferred stock, and net asset value per share of common stock.

Profitability ratios are among the ratios used most often in analyzing a company's financial well being. They include operating margin of profit, operating cost ratio, net profit ratio, price-earnings ratio, return on total assets, and return on net worth.

Various other ratios could be included in these comparisons. Once you've completed this month's template, you'll see how easy it is to add (or delete) any ratios you want to. In fact, that's one of the real strengths of *VisiCalc*—the ability to change your templates quickly whenever you need to.

Most of the information required to complete these ratios can be found in a company's 10K or annual reports. Other information, such as stock price and average daily sales, may or may not be readily available. You'll have to get that kind of information from the company directly or from a stockbroker; in some cases, you may have to draw your own conclusions from related information you've been able to garner from other sources.

If you use *VisiCalc* often, you can probably see already just how simple completing this template will be. Much of the data from the financial statements is used in a number of different formulas. For example, net profit is used in calculating three ratios. Given that, it makes sense to have a data entry section, where the information taken from the reports

Liquidity Ratios

Net working capital = current assets - current liabilities

Current ratio = current assets / current liabilities

Quick asset ratio = quick assets / current liabilities

Activity Ratios

Inventory turnover = sales / inventory

Inventory as a percent of assets = inventory / total assets

Average collection period = receivables / sales per day

Fixed asset turnover = sales / net fixed assets

Total asset turnover = sales / total assets

Leverage/Equity Ratios

Debt to total assets = total debt / total assets

Net asset value per bond = total assets - intangible assets - current liabilities / bonds out

Net asset value per share of preferred stock = total tangible assets - current liabilities - long term liabilities / shares of preferred stock

Net asset value per share of common stock = total tangible assets - current liabilities - long term liabilities - value preferred stock / shares of common stock

Profitability Ratios

Operating margin of profit = operating profit / sales

Operating cost ratio = 1 - operating margin of profit

Net profit ratio = net profit / sales

Price/earnings ratio = market price / earnings per share

Return on total assets = net profit (after tax) / total assets

Return on net worth = net profit (after tax) / net worth

Figure 1.

Cdex™ Training for VisiCalc® Makes VisiCalc Easy.



In an hour, Cdex Training for VisiCalc can make you a VisiCalc user. Or for the experienced VisiCalc user Cdex Training for VisiCalc acts as an instantaneous electronic reference and review system.

It's a computer-assisted training program that *works*. It's highly interactive. So it creates a dialogue with you and serves as

your personal tutor. It's completely self-paced. So you set your own learning time. And it's graphically-oriented. So you see what you're learning. Remember, a picture is worth 1000 words. Cdex Training for VisiCalc runs on the same Apple® II or IBM® Personal Computer as your VisiCalc program.

So see how easy VisiCalc can be. See your nearest computer dealer for a demonstration.

Cdex™ Training for VisiCalc®

We don't make VisiCalc.
We just make it easy.

cdex™

Cdex Corporation
5050 El Camino Real Suite 200
Los Altos, CA 94022

VisiCalc® is a registered trademark of VisiCorp™

is entered only once; and a computational section, where the required ratios are computed. We'll also have a report section that's dedicated solely to the display of the ratios.

Ratios aren't particularly useful in isolation. They become more useful when you collect them over a number of years or periods and compare them. A comparison of one company's information against industry averages or information about competitors gives added perspective. A manager or investor equipped with five years of a company's financial ratios and the comparative industry average ratios has a good basic financial picture of a company.

There are a couple of caveats.

First, financial ratios are only a part of the picture. There are other tangible and intangible factors to consider, such as new (announced or unannounced) products, changing market demands, interest rates, general economic trends, and so on, that should also be weighed when you're trying to get a more complete picture of a company.

Second, the data presented in financial reports is developed by accountants and financial officers of a company. Each company can, to a great degree, choose how to define the data presented in its reports. This means that reports from different companies probably won't have the same format, nor will each entry necessarily represent the same information. You may have to do some editing before you enter information into the data entry section of your model. The editing required should be minimal, however.

If you have any questions about the definitions of financial terms, you can generally find the answers in a financial textbook.

The Model. The number of ratios we've discussed tells you that this is going to be a large template. For the purposes of this article, we'll do only some of the formulas in the template. If you wish, you can complete the template by entering the remaining formulas. If you do, you'll have a very useful tool.

The data entry section is the place you'll usually start when using the template, so let's begin there. Laying out the template in a logical fashion will make a difference later on when you begin analyzing reports because fewer calculations will be required. If we place the data entry section at the top of the template and the calculation section below it, the individual formulas will be able to use the information immediately and the template probably won't require any further recalculations to be accurate.

For the sake of presentation and printing, we'll place a ratio report section directly below the data entry section in our example. Then you'll be able to print both sections at once. This means that the model will always require one additional calculation to be accurate.

Before we begin entering random formulas, let's take a minute to discuss the internal order of the three sections. The information in the data entry section will be the same as it would be in actual financial reports. This simplifies entering the data because you can just follow the report format. The ratios displayed in the report section will be grouped by the type of ratio (for example, liquidity ratios). The computational section will group the formulas in the same section order as the financial reports do. So ratios that use information from the balance sheet will be included in a balance sheet part of the computational section. We'll also lay out and label each calculation so that the component parts will be apparent.

Arranging the template in this manner simplifies data entry and makes it easier to see where the ratios actually come from. For example, if you have a question about how a ratio is computed, you'll be able to go to the correct report section of the computational area and see the actual calculations. As we'll see later, this permits you to do what-if analysis on the ratios.

Since we're going to do comparisons of different periods, competitors, and/or industry averages, we'll want to place similar ratios side by side. It's up to you whether to design the template to be horizontal or vertical. Since most time series are horizontal, we'll do our time references in a horizontal format also. That will give us at least sixty columns (three columns will be required for labels) to enter years or different competitive ratios for equivalent periods.

Now let's decide what the data entry section should look like. It would be nice if all annual reports and 10K reports used the same

format, but, sadly, they don't. The best method is probably to use the most complete balance sheet and income statement you can find as a model. You'll also have to have a section for the other data (for example, stock prices) that isn't usually included in those reports. For example, we'll use a sample of a 10K report that has proved to be complete enough for most analysis.

Figure 2 shows our data entry section. Note in our example that the labels in column B are out of proportion to the width of the other columns. This is so because this example was done using *VisiCalc Advanced Version*. If you don't have the *Advanced Version*, you can enter the same labels across two or three columns.

Each of the columns shown that's headed by 19XX can either have yearly information from financial reports or competitive data from other companies.

	B	C	D	E	F
6					
7					
8					
9	BALANCE SHEET	19XX	19XX	19XX	19XX
10	= = = = =				
11	ASSETS				
12	Cash				
13	Marketable Securities				
14	Receivables				
15	Quick Assets				
16	Inventory				
17	Prepaid Expenses				
18	Total Current Assets				
19	Property, Plant, Building				
20	Accumulated Depreciation				
21	Net Fixed Assets				
22	Intangible Assets				
23	Total Assets				
24					
25	LIABILITIES & EQUITY				
26	Notes Payable				
27	Payables & Accruals				
28	Federal & State Income Tax				
29	Total Current Liabilities				
30					
31	Long Term Liabilities				
32	Bonds Outstanding				
33	Total Liabilities				
34					
35	STOCKHOLDERS' EQUITY				
36	Common Stock Value				
37	Shares of Common Stock				
38	Preferred Stock Value				
39	Shares of Preferred Stock				
40	Additional Paid in Capital				
41	Retained Earnings				
42	Total Stockholders' Equity				
43					
44	TOTAL LIABILITIES & EQUITY				
45					
46					
47	EARNINGS & RETAINED EARNINGS				
48	= = = = =				
49					
50	Net Sales				
51	Cost of Sales				
52	Operating Profit				
53	Other Income				
54	Interest Expense				
55	Earnings Before Tax				
56	Federal & State Taxes				
57	Net Earnings				
58	Retained Earnings (Beginning)				
59	Total				
60	Cash Dividends				
61	Retained Earnings (Ending)				
62					
63	Earnings/Share				
64	Cash Dividends/Share				
65	Market/Price/Share Common				

Figure 2.

Figure 3 shows the financial ratio report section. If you have an Apple II with 48K or less of memory, you should monitor the size of the model as you build it. This model was developed originally on an Apple II with 64K of memory and had memory left over.

Finally, we should begin the computation section shown in figure 4. You'll notice as you enter the labels that the computation for each ratio is shown. In the first example, net working capital is defined as current assets minus current liabilities. In the second example, current ratio is current assets divided by current liabilities. To simplify our example, we'll only work through the computations for the first two ratios.

Calculating the Formulas. Net working capital is our first ratio. In C111, enter the current asset value for column C. The entry is +C18. In C112, enter current liability (+C29). The net working capital is +C111-C112. Alternately, you could use the original cell references (that is, +C18-C29). To enter net working capital in the report section, enter +C113 in cell C75.

Calculating current ratio is equally simple. In C115, enter +C18, and, in C116, enter +C29. The current ratio formula in C117 is +C115/C116 (or C18/C29). To enter the current ratio in the report section, enter +C117 in cell C76.

If you try to complete the template in this manner, you'll find that you're jumping all around the worksheet. There is an easier way. Move the cursor to the center of your screen and divide the screen with a horizontal window (/WH). Move the cursor in the lower window to the computation section and the cursor in the upper window to the data entry section.

Complete the computation section first. As you enter the cell references, it's a simple matter to see the cell reference in the upper window. You can enter the cell reference manually or point with the cursor, using ":", to jump between windows.

Once you've completed all the formulas, it's just as simple to relocate the upper window to the ratio report section and enter the corresponding cell references from the computation section for each ratio. Of course, you'll occasionally have to reposition the lower window.

From this point on, completing the template is as simple as following

	B	C	D	E	F
	COMPANY NAME				
	FINANCIAL ANALYSIS				
71		19XX	19XX	19XX	19XX
72					
73	LIQUIDITY RATIOS				
74	=====				
75	Net Working Capital				
76	Current Ratio				
77	Quick Asset Ratio				
78					
79	ACTIVITY RATIOS				
80	=====				
81	Inventory Turnover				
82	Inventory as % of Assets				
83	Average Collection Period				
84	Fixed Asset Turnover				
85	Total Asset Turnover				
86					
87	LEVERAGE/EQUITY RATIOS				
88	=====				
89	Debt to Total Assets				
90	Net Asset Value/Bond				
91	Net Asset Value/Share P.S.				
92	Net Book Value/Share C.S.				
93					
94					
95	PROFITABILITY RATIOS				
96	=====				
97	Operating Margin of Profit				
98	Operating Cost Ratio				
99	Net Profit Ratio				
100	Price/Earnings Ratio				
101	Return on Total Assets				
102	Return on Net Worth				
103					

Figure 3.

	B	C	D	E	F
107	COMPUTATIONS				
108	=====				
109	BALANCE SHEET	19XX	19XX	19XX	19XX
110	-----				
111	Current Assets				
112	- Current Liabilities				
113	Net Working Capital				
114	-----				
115	Current Assets/				
116	Current Liabilities				
117	Current Ratio				
118	-----				
119	Quick Assets/				
120	Current Liabilities				
121	Quick Asset Ratio				
122	-----				
123	Total Debt/				
124	Total Assets				
125	Debt to Total Assets				
126	-----				
127	Sales/				
128	Inventory				
129	Inventory Turnover				
130	-----				
131	Inventory/				
132	Total Assets				
133	Inventory as % of Assets				
134	-----				
135	Receivables/				
136	Sales/Day				
137	Average Collection Period				
138	-----				
139	Sales/				
140	Net Fixed Assets				
141	Fixed Asset Turnover				
142	-----				
143	Sales/				
144	Total Assets				
145	Total Asset Turnover				
146	-----				
147	Total Assets				
148	- Intangible Assets				
149	-----				
150	Total Tangible Assets				
151	- Current Liabilities				
152	-----				
153	Net Tangible Assets/				
154	Bonds Outstanding				
155	-----				
156	Net Asset Value/Bond				
157	-----				
158	Total Tangible Assets				
159	- Current Liabilities				
160	- Long Term Liabilities				
161	-----				
162	Net Assets Backing P.S./				
163	Shares of Preferred Stock				
164	-----				
165	Net Asset Value/Share P.S.				
166	-----				
167	Total Tangible Assets				
168	- Current Liabilities				
169	- Long Term Liabilities				
170	- Preferred Stock				
171	-----				
172	Net Assets/				
173	Shares of Common Stock				
174	-----				
175	Net Book Value/Share C.S.				
176	-----				
177					
178	INCOME STATEMENT	19XX	19XX	19XX	19XX
179	-----				
180	Operating Profit/				
181	Sales				
182	Operating Margin of Profit				
183	-----				
184	1 - Op. Margin of Profit				
185	Operating Cost Ratio				
186	-----				
187	Net Profit/				
188	Sales				
189	Net Profit Ratio				
190	-----				
191	Market Price/				
192	Earnings/Share				
193	Price Earnings Ratio				
194	-----				
195	Net Profit (After Tax)/				
196	Total Assets				
197	Return on Total Assets				
198	-----				
199	Net Profit (After Tax)/				
200	Net Worth				
201	Return on Net Worth				

Figure 4.

A TEACHER FOR THE APPLE

Learn How to Operate the Apple II Plus with the same self-study course Apple has chosen to train its own field sales reps!

Imagine having a personal tutor "talk you through" the practical operations of an Apple II Plus computer. In just 3 "hands on" training sessions of one or two hours each, you'll learn how to:

- Use each special key and essential command
- Load and run programs
- Save programs and data
- Copy programs and diskettes
- Protect programs
- Modify programs
- Use your computer as a super calculator
- And much more!

No Programming Required. You don't need to be a programmer to operate a computer, any more than you need to know how to design a car to drive one.

Our purpose is to put you in the driver's seat of your Apple computer so that you can confidently use existing programs . . . enter your own data . . . organize your files . . . and protect them. If you later decide to take up programming, you'll have the necessary background for doing so.

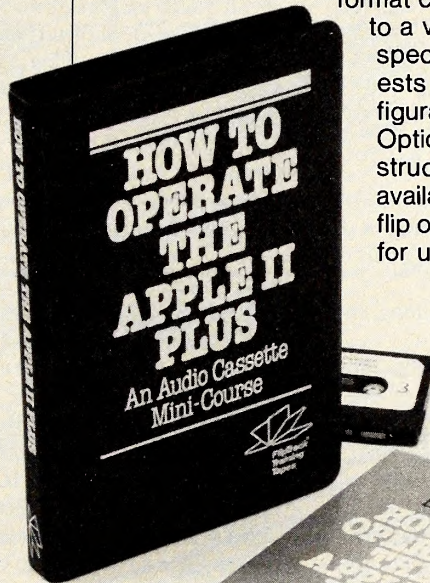
Teach Yourself. Train Others.

How to Operate the Apple II Plus is designed for the first-time computer user. No technical knowledge is assumed. Perfect for training others: Staff . . . colleagues . . . clients . . . customers . . . students . . . family. Use it again and again.

Why Audio Instruction? Simple. It's human. It's interactive. It's multi-sensory. It's patient. It's inexpensive. And it works!

FlipTrack® Training Tapes deliver carefully sequenced instruction in a relaxed, conversational manner. You concentrate on the screen and keyboard, not a book. You learn at your own pace, trying every command and observing the results.

The FlipTrack® Difference. Best of all, our patented FlipTrack® cassette format can adjust to a variety of special interests and configurations. Optional instruction is available at a flip of the tape for users



with color video, a printer, a second disk drive, or game controllers.

You save time and avoid confusion by learning just the procedures that relate to your system, or listening to just the topics that interest you. With FlipTrack® Training Tapes, you choose whether to follow a "full" track or a

"fast" track every step of the way.

Examine How to Operate the Apple II Plus FREE for 15 days. Let FlipTrack® Training Tapes speak for themselves by dropping by your local Apple dealer for an on-the-spot demonstration. Or if that's not convenient, we'll be happy to send you the complete mini-course on a 15-day "right of return" basis. You'll receive all 3 FlipTrack® cassettes in a handy vinyl binder, along with an Operator's Guide, which will serve as your permanent reference to the procedures, terms and concepts of the course.

Your only prerequisite is an Apple II Plus computer with the System

Master 3.3 diskette and a standard audio cassette player. No computer hookup is necessary for the cassette player.

Try a lesson or two yourself, or share them with others. If you are not delighted at how quickly and easily you master the operation of your Apple, simply return the program in its original condition for a full refund. No questions asked.

To order . . . See your local Apple dealer. Return the coupon below. Or call us toll free. Here's our 24-hour toll free number for credit card orders only:

800/227-1617, Ext. 439

In California, call

800/772-3545, Ext. 439.

You have nothing to lose, so act today.

YES! Please rush me *How to Operate the Apple II Plus*. I understand that if I'm not delighted, I may return the mini-course undamaged within 15 days for a full refund. No questions asked.

☐ My check is enclosed for \$52.45 (\$49.95 plus \$2.50 shipping & handling) Illinois customers include sales tax.

☐ Charge my credit card:

☐ VISA ☐ MasterCard Interbank No. _____

Card No. _____ Exp. Date _____

Name _____

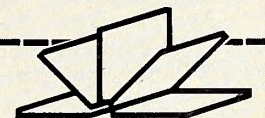
Address _____

City _____ State _____ Zip _____

Signature _____ Phone _____

Outside USA add \$10 per unit. Airmail extra.

Apple is a TM of Apple Computer, Inc. VisiCalc is a TM of VisiCorp.



FlipTrack®
Learning Systems

Division of Mosaic Media, Inc.
Dept. ST-8, P.O. Box 711
Glen Ellyn, IL 60137
312/790-1117

NEW COURSES!

How to Operate the Apple ///
4 audio cassettes, 1 diskette & Operator's Guide . . . \$95.00

How to Use VisiCalc
4 audio cassettes & User's Guide . . . \$65.00

	A	B	C
16	Inventory		1500000
17	Prepaid Expenses		7200
18	Total Current Assets		644000
19			
29	Total Current Liabilities		316000
	A	B	C
76	Current Ratio		2.037975
108			
109	BALANCE SHEET		1982
110	-----		
111	Current Assets		644000
112	—Current Liabilities		316000
113	Net Working Capital		328000
114			
115	Current Assets/		644000
116	Current Liabilities		316000
117	Current Ratio		2.037975

Figure 5.

the instructions presented in the labels in the computational section. If you want to, go ahead and complete and save (/SS) the remaining part of the template.

Figure 5 shows an example of completed entries, computations, and ratios for net working capital and current ratio.

You'll notice that we've managed to show four different sections of information on the same screen. At times you may want to see different parts of a template at the same time. Using a window and setting individual titles in each window is the answer.

What If? For once, that isn't really the question. Assume we've calculated the ratios of a business for a number of years. Let's say that we can see immediately that some of the ratios aren't even close to the industry average or competitive ratios. We aren't trying to determine what happens (what if?) when a value changes. Instead, we're wondering what financial report entries apply and how much we must change them to

cause the ratios we've calculated to be near the average or competitive ratios.

Let's take a common ratio and see how we can use *VisiCalc* to learn something about the business.

Inventory turnover is a measure of the value (size) of an inventory compared to the dollar amount of sales. Some businesses (grocery stores, for example) have very high inventory turnover, while others (such as expensive art galleries) have lower turnover. Two factors affect inventory "turns"—sales and inventory. If we increase sales or decrease inventory, we get a higher inventory turnover.

If our business has had an inventory turnover ratio of 12 and the average is 14, we have to decide what to change to make the ratios equivalent. It would be ideal if we could simply increase sales but, unhappily, that can often be difficult. Our option is to decrease inventory. What does that buy us? One thing we could do is to convert some of that inventory to cash and use it to pay off a debt. This would save us money by decreasing an expense. On the other hand, maybe we ought to leave our inventory ratio alone; maybe we are outselling our competition because we have the best selection of anyone in the area.

Back to our model. If you go to C128, you'll be able to enter different inventory amounts until the ratio is near the average. The difference between the report inventory and our final inventory is the amount of excess inventory you might want to convert to another asset.

It's worthwhile to remember an important caveat about financial ratios. Sometimes ratios can be substantially different from industry averages and yet not indicate a need for any changes in the operation of a business. For example, some companies operate highly leveraged, and some like very little debt. Remember, ratios are just another way to measure a business. They are not the answer.

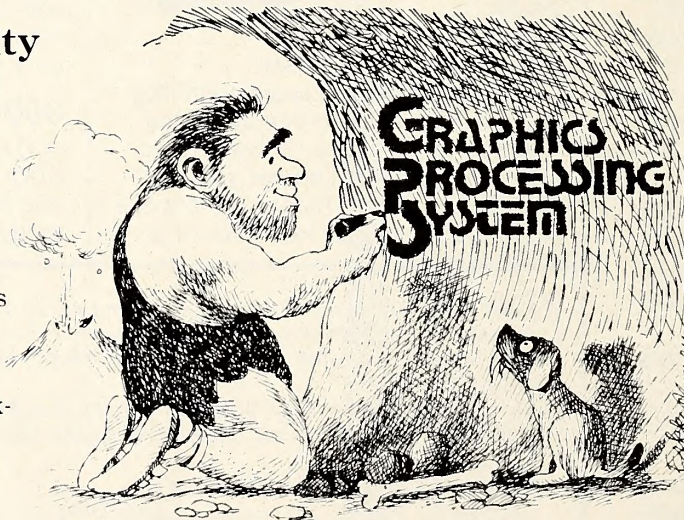
Next Time We Meet. If you read the article in this issue on the Connors/Borg Apple Challenge, you saw that *VisiCalc* was used to compute the important match statistics. Next month, we'll look at how that was done and at how to create similar templates for analyzing other sports. Even if you're not particularly sports-minded, you'll be able to learn some interesting things about using *VisiCalc*. ■

STONEWARE'S AMAZING NEW GRAPHICS PROCESSING SYSTEM

Professional quality graphics for the Apple II Plus.

After two years of development, Graphics Processing System is the ultimate in fast, low cost, easy-to-use graphics programs. Graphics Processing System creates and edits images in the same manner word processors work with text.

Graphics Processing System features: **Grid Maker** for working with scale and proportion ■ **Colors** can be mixed and used to color lines, objects and backgrounds ■ **Two Zoom** powers for greater detail resolution ■ **2-D Rotation** to full 360° ■ **Duplication** on screen, to disk, and from disk ■ **Text Capabilities** in upper case A-Z, 0-9, and all characters on the Apple keyboard ■ **Modify or Erase** a portion of an image without having to



- start from the beginning
- **Enlarge or Reduce** images
- **Change Proportions** vertically and/or horizontally
- **Print Overlays** separately and in different colors
- **Accesses 16K RAM card**
- **Compatible** with other Apple HiRes graphics
- **Uses** Apple compatible game paddles and joystick
- **Speaks** directly to The Apple Silentype printer and accommodates graphic dump programs for other printers
- **Professional Version** is also compatible with Apple Graphics Tablet, Symtec Light Pen, Houston Instruments HiPlot DMP 3, 4, 6 and 7, HP7470A Plotter, Strobe 100 Plotter, IDS 460 and 560 Graphics Printers, Epson MX80 Printer with Graphtrix.

HiPlot DMP 3, 4, 6 and 7, HP7470A Plotter, Strobe 100 Plotter, IDS 460 and 560 Graphics Printers, Epson MX80 Printer with Graphtrix.

Only \$179. for Professional Version and \$69. for Standard Version.



Requires 48K Apple II Plus, one or two Apple Disk drives, B&W or color screen, game paddles or joystick. Optional: 16K RAM Card or Language Card, Apple Silentype or other B&W or color printer. GPS is available through leading software distributors and Apple Dealers. Or send check, money order, Visa or MasterCard (include expiration date) to Stoneware Incorporated. California residents add 6% sales tax.

Reg. Trademarks: Apple: Apple Computer, Inc.; Symtec: SYMTEC, Inc.; HiPlot: Houston Instruments Div. of Bausch & Lomb; HP7470A: Hewlett-Packard Co.; Strobe 100: Strobe, Inc.; IDS 460 & 560: Integral Data Systems, Inc.; Epson MX80: Epson America, Inc.

IS THERE A CHOICE?

**PRICE. SOME OF THE
BEST PRICES AROUND.
CALL FOR QUOTES.**

**EASE OF ORDERING. WHY
WASTE TIME AND MONEY?
CALLING IS CONVENIENT.**

**SELECTION. OVER 1000
APPLE PRODUCTS. CALL
FOR NEW ADDITIONS.**

**FAST DELIVERY. MOST
ORDERS SHIPPED WITHIN
48 HOURS. TEST US!**

APPLE SPECIALS

**HAYES
MICROMODEM II
LINK SYSTEMS
DATALINK
KENSINGTON
SYSTEM SAVER
VISICORP
VISICALC 3.3
LJK
LETTER PERFECT
W/MAIL MERGE**

**SYNERGISTIC
HIGHER GRAPHICS II
SYNERGISTIC
GAME ANIMATION
TG PRODUCTS
JOYSTICK
SIR-TECH
STAR MAZE
OPTIMIZED
SPEED READ PLUS**

FREE EVERGREEN CATALOGUE

All products are the trademarks of their respective manufacturers. Apple is a trademark of Apple Computer Inc.

**CALL TOLL FREE
7 AM-7 PM PACIFIC
MON-SAT**



COD

**IN WASHINGTON
CALL 206-522-9596**

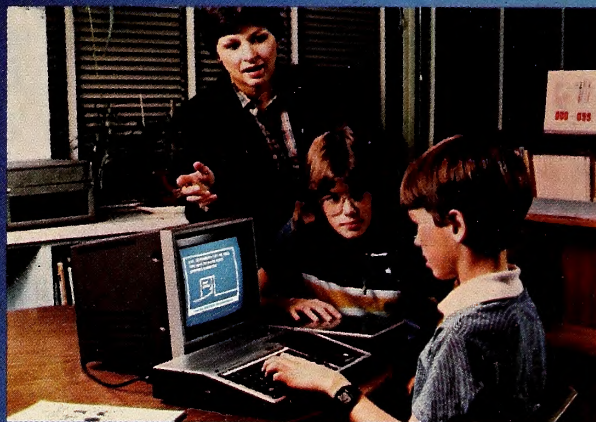
EVERGREEN MICROS

**6047 40TH AVE NE
SEATTLE, WA 98115**

1-800-826-3100

PLATO WIDENS YOUR CHILD'S WORLD.

Announcing new educational courseware
for microcomputers to improve your child's
Basic Skills, High School Skills or Foreign Language vocabulary.



**NOW. PLATO Basic Skills.
NOW. PLATO High School Skills.
Both for use with TI 99/4A.***

Control Data and Texas Instruments are working together to make this nationally recognized PLATO courseware available via microcomputers.

Control Data's PLATO Basic Skills is a comprehensive curriculum designed to enhance the development of elementary and junior high Reading, Math and Grammar skills.

Control Data's PLATO High School Skills help high school level students master Reading, English, Math, Social Studies and Science. It has been used to assist students preparing for G.E.D. exams.

*For Basic and High School Skills pricing and order information, write: Texas Instruments, Education Department, Box 53, Lubbock, TX 79408.

WIDEN YOUR CHILD'S WORLD WITH THIS INTRODUCTORY OFFERING.

10 DAY MONEY-BACK GUARANTEE.

Now, until May 31, 1983, when ordering a lesson at \$45.00, you may order additional lessons for just \$35.00 each. (Additional disk is included with each lesson at no additional charge.)

Mail this form, or call toll-free 800/233-3784. (In California, call 800/233-3785.)

Apple® is a trademark of Apple Computer, Inc.
Atari® is a registered trademark of Atari, Inc.
TI® is a registered trademark of Texas Instruments.

Warranty available free from the Control Data Publishing Co., 4455 Eastgate Mall, San Diego, CA 92121.

**BEFORE ORDERING: CHECK TO
MAKE SURE YOUR EQUIPMENT
MEETS THESE REQUIREMENTS.**

	Apple II PLUS	Atari 800	TI 99/4A
Memory:	48K	48K	48K
No. of drives required:	1 disk and controller	1 disk and controller	1 disk and controller
Operating System:	D.O.S. 3.3	D.O.S. 2	PLATO Interpreter Cartridge*
Will display on any color or b/w monitor or TV compatible with your microcomputer listed.			

*PLATO Interpreter Cartridge may be ordered directly with the order form below. Only one per TI 99/4A machine is needed.

CONTROL DATA PUBLISHING CO., P.O. Box 261127, San Diego, CA 92126

SHIP TO: (Please Print)

Name _____

Address _____

City _____ State _____ Zip _____

☐ Payment enclosed (Check or money order only. Make payable to Control Data Publishing Co.).

☐ Mastercharge ☐ VISA ☐ American Express ☐ Diners Club

Card Number _____ Expiration Date _____

Your signature _____ Phone _____

INTRODUCTORY PRICES: One lesson \$45.00. Each additional lesson \$35.00.

Price for order: \$ _____

Calif. Residents: add 6%
sales tax. \$ _____

Add \$2 shipping and
handling. \$ **2.00**

TOTAL PRICE: \$ _____

☐ Include PLATO Interpreter Cartridge
for my TI 99/4A. Price \$50.00.

☐ Please send information on _____
lesson(s).

☐ Please send _____
copies of your courseware catalog.

Please complete the following: (Indicate computer for which you are ordering courseware.)

APPLE II PLUS ☐ ATARI 800 ☐ TI 99/4A ☐

Available on APPLE II PLUS only

Quantity	Title (see course description for skill level)
	Basic Number Facts
	Whole Numbers
	Decimals
	Fractions
	Physics—Elementary Mechanics
	French Vocabulary Builder
	German Vocabulary Builder
	Spanish Vocabulary Builder
	Computer Literacy Introduction

Allow 3-5 weeks for delivery

Quantity	Title (see course description for skill level)
	French—Travel Words
	German—Travel Words
	Spanish—Travel Words
	French—Shopping Words
	German—Shopping Words
	Spanish—Shopping Words
	French—Classroom Words
	German—Classroom Words
	Spanish—Classroom Words

Available March 30. Allow 3-5 weeks for delivery

If not completely satisfied, you may return all lesson material within 10 days of receipt for a refund. All orders subject to acceptance. This introductory offering expires May 31, 1983.

Control Data Publishing Company supplies this courseware under a personal license agreement rather than for sale. Customers obtain the right to possess and use PLATO courseware by paying the prices specified and agreeing to the terms and conditions of the license agreement contained in the package.

PLATO WIDENS YOUR CHILD'S WORLD.

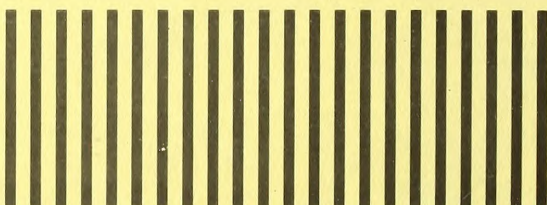


BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 200108 SAN DIEGO, CA

Postage will be paid by addressee

CONTROL DATA PUBLISHING CO.
P.O. Box 261127
San Diego, CA 92126

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



NEW!* Nine lessons in Foreign Languages for use with Apple II Plus.

Three lessons each for French, Spanish and German. Each lesson uses a hangman or pyramid game to help children learn words most associated with defined activities. For junior or senior high students.

Travel Words: Children study French, Spanish or German words they need to know to buy train, plane or bus tickets; order in a restaurant; request medical assistance; read street signs; etc.

Shopping Words: Children study French, Spanish or German words they need to know to shop for food, clothing, etc.

Classroom Words: Children study the French, Spanish or

German words that are common to the school environment.

*Available March 30

Lessons Available For Apple II Plus, TI 99/4A and Atari 800.

Basic Number Facts: Practice in addition without carrying; subtraction without borrowing; and multiplication/division with single digits. For elementary students.

Whole Numbers: Practice in addition, subtraction, multiplication, division and mixed numbers. For elementary and junior high students.

Decimals: Practice locating decimal numbers on the number line. For elementary students.

Fractions: Same skill level and format as decimals.

Physics—Elementary

Mechanics: Students are shown a physical problem, then must "purchase" the missing information to answer it correctly. For senior high physics students.

French, German, Spanish Vocabulary Builders: Gives children a basic vocabulary of 500 words. Supplements introductory and refresher courses.

Computer Literacy—Introduction: For jr. or sr. high and vocational school students.

INTRODUCTORY OFFERING:

- Single lesson, \$45.00
- Additional lessons, \$35.00 ea.
- Additional disk included with each lesson ordered at no extra charge
- 10 day money-back trial



SEND FOR PLATO COURSEWARE CATALOG

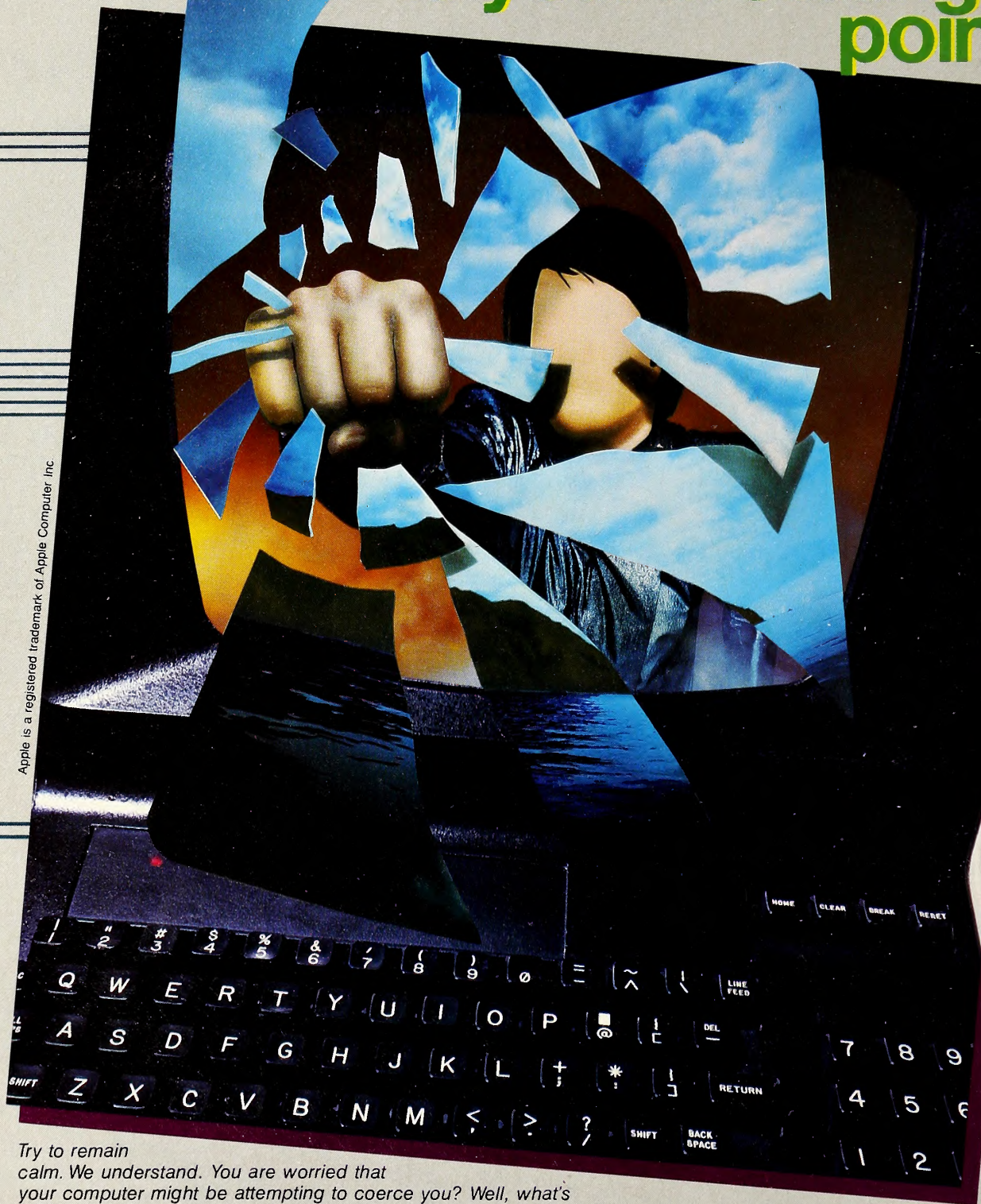
For a free copy of our PLATO catalog, or to order, mail reply card; call toll-free 800/233-3784; or write Control Data Publishing Co., P.O. Box 261127, San Diego, CA 92126. In California, call 800/233-3785.

GD
CONTROL DATA
PUBLISHING

PLATO®
COMPUTER-BASED EDUCATION

Welcome to your breaking point.

Apple is a registered trademark of Apple Computer Inc.



© Copyright 1982 Edu-Ware Services, Inc.

Try to remain calm. We understand. You are worried that your computer might be attempting to coerce you? Well, what's a little coercion among friends?

As a new arrival on The Island, you will be expected to divulge certain information. You will not leave until we obtain it . . . and we will. Of course, when we gain, you lose.

Please endeavor to maintain the proper perspective. A pleasant adventure can so easily lead to obsession . . . Applesoft, 48K, DOS 3.3 . . . \$32.95 Available at computer stores on finer Islands everywhere. Exclusively from if™

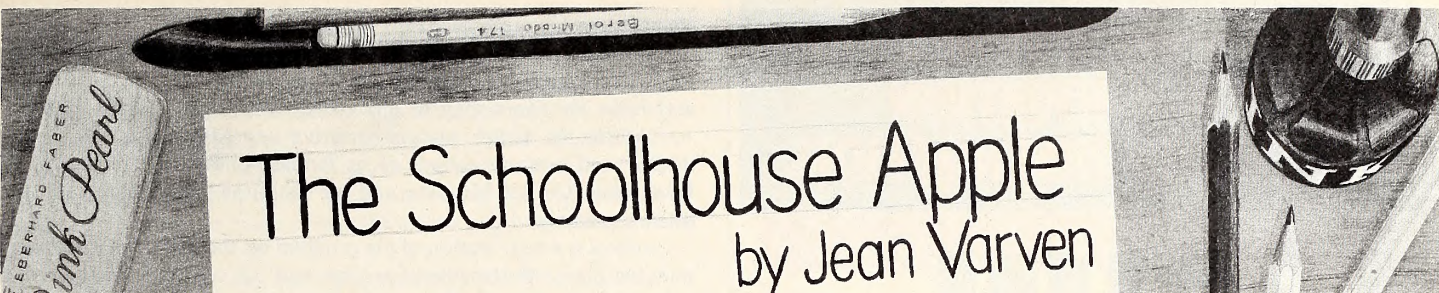
interactive fantasies, a division of Edu-Ware Services.
P.O. Box 22222 • Agoura, CA 91301

Prisoner 2

A science fiction nightmare by David Mullich.



**interactive
fantasies**



The Schoolhouse Apple

by Jean Varven

Various people are predicting that educational software will be the fastest growing segment of the microcomputer market during the coming year. The number of new programs released in the last six months lends credibility to this assertion. Because of this, software for learning takes February's Schoolhouse Apple spotlight.

Interested parties—educators, parents, software designers, programmers, people with money to invest, and others—seem to be thinking hard lately about what elements help make a piece of educational software an effective learning tool. A sound theoretical base, logical organization, straightforward instructions, and an appreciation of the computer's special capabilities would seem to be among the key ingredients. Feedback from intended users (real, live kids) is also an essential element in the creation of a good program.

The programs reviewed in this issue are some of those that are causing excitement in kids and in the educational community.

Gertrude's Secrets and Gertrude's Puzzles. By Teri Perl, Leslie Grimm, and Warren Robinett. In these two programs, kids learn by experience to analyze situations, think logically, and solve problems. Their guide along the way is Gertrude, a goose with secrets to share and challenging puzzles to present. Uncovering her secrets and solving her puzzles isn't easy—at first. It requires developing the ability to discover the rules a particular puzzle reflects.

Gertrude's Secrets is designed for kids ages four to nine. *Gertrude's Puzzles* has harder puzzles and gives players no hints about their solutions; it's intended for players age six and up and picks up on the skills the first program addresses.

Like *Moptown*, an earlier Learning Company creation, the Gertrude programs help kids learn to identify samenesses and differences on several levels. In these new programs, kids develop and expand their knowledge. Once they see that purple squares differ from green triangles on two levels, shape and color, and blue triangles and green ones are the same on one level (shape) and different on another (color), they're ready to discover the patterns, sets, and subsets that can be created using shapes of different colors.

The player learns two things right off: how to move around and how to pick up and drop objects. From the keyboard, the player uses the I-J-K-M diamond to move up, left, right, and down. These keys also work with control, for slow, small moves, and with repeat, for moving the player along briskly. From the keyboard, objects can be picked up or dropped by hitting the space bar. In the joystick mode, the player moves using the handle and picks up and drops objects by pressing either of the joystick buttons.

The objects to be picked up and set back down include Gertrude and various colored shapes. Children can choose between basic geometric shapes, which are the default, and sets of animal, flower, monster, and other novelty shapes; they can also freely modify any of the shapes using a built-in shape editor. The shapes they choose will be used throughout the puzzles.

The colorful manuals that accompany the programs are addressed to players rather than to parents. They do a good job of explaining how the programs work, although kids don't need to read the manuals to get up and running. Each of the manuals contains a map that shows the layout of Gertrude's secret rooms. Activity cards that enable kids to play similar off-computer games are also available to users who send in the warranty cards that accompany the programs. A brief supplementary section with information about the concepts being explored would probably be welcomed by parents and teachers (and by some kids). So would

something about the learning theory on which the programs are founded.

Both programs are colorful, logically organized, and easy to use. Both are also fun, challenging, and genuinely educational. After all, they help kids exercise and develop the ability to think.

Gertrude's Secrets and Gertrude's Puzzles, by Teri Perl, Leslie Grimm, and Warren Robinett, the Learning Company (4370 Alpine Road, Portola Valley, CA 94025; 415-851-3160). \$75 each.

Dragon's Keep. By Mike MacChesney, Al Lowe, Rae MacChesney, and Margaret Lowe. *Dragon's Keep*, a delightful adventure game from a new California company, was designed with the very young adventurer in mind. The vocabulary used in the game is at the second grade reading level (except for *dragon*, a fourth grade word), and instead of typing in their responses, players need only press the space bar or the return key to indicate the actions they want to take. This means that youngsters who can read at the second grade level can play the game all by themselves with confidence, and younger children can play if the text on screen is read to them by their parents or by an older child.

The action of *Dragon's Keep* takes place in and around a many-roomed magic house, the dragon's house. The object of the game is to find and set free sixteen animals that want to escape the dragon who holds them captive. Naturally, the animals are grateful when the adventurer succeeds in rescuing them. And, naturally, the dragon is always hanging around, hoping to foil the adventurer's attempts.

The player can't free an animal or even poke around when the dragon's in a room; after all, it is the dragon's house. So, the adventurer must move on and return to that room later.

This adventure game for young children really works. The level of the vocabulary is appropriate and the content is challenging, yet manageable. The graphics, created with Penguin Software's *Graphics Magician*, are colorful and attractive; and children will have no trouble recognizing the objects and animals depicted.

The documentation that accompanies the program is brief, clearly written, and certainly adequate. Additional information about the learning theory underlying the program would be nice to have, though. An illustration of the *Dragon's Keep* world, accompanied by some elementary map-making guidelines, would also be welcome.

Perhaps the most striking aspects of this program are its mood and tone. Children are introduced to a magic world in which their efforts at exploration are encouraged and their successes are rewarded. They are never put down for making moves that don't achieve the results they expected. The program's authors promote logical thinking by creating an entertaining world in which thinking of this kind is called for.

Clearly, Sunnyside Soft has succeeded in its effort to create a positive learning environment, one that young computer users will flourish in. *Dragon's Keep*, by Mike MacChesney, Al Lowe, Rae MacChesney, and Margaret Lowe, Sunnyside Soft (5815 East Parkside, Fresno, CA 93727; 209-251-5400). \$39.95.

Mix and Match. By Children's Television Workshop. Here at last—Apple learning games starring the Muppets and based on the games developed for Sesame Place educational park in Langhorne, Pennsylvania.

In a move that comes as something of a surprise, Apple Computer has released the first three Discovery Games disks—*Ernie's Quiz*, *Instant Zoo*, and *Spotlight*—in Integer Basic rather than in Applesoft. If you own an Apple II, this is good news; if you've got a II Plus, you'll need an Integer card or RAM card in order to run these programs. The fourth program, *Mix and Match*, is written in Applesoft and will run on any 48K Apple II Plus (and on 48K Apple IIs outfitted with an Apple-

ANNOUNCING AN INNOVATION IN TYPING INSTRUCTION.

FUN.

Improve your keyboard skills with MasterType.

A typing program for the Apple II that dares to be fun. But it's not just child's play. No matter who you are, your computer will become a more efficient tool, as you become a more proficient typist. And MasterType can help. Dramatically.

But don't just take our word for it.

Infoworld magazine had this to say about Lightning Software's Hi-Res MasterType: "MasterType is an excellent instructional typing game. We had fun reviewing it, and we highly recommend it to those who want to learn typing in an unconventional but motivating way."

Infoworld also went on to rate MasterType as Excellent in all categories.

Bring your Apple hours of fun.

Learning to type has never been so enjoyable. And since MasterType has 18 different learning levels, you can play for hours while your typing gets increasingly better. And all for only \$39.95.

Lightning Software ©
P.O. Box 11725, Palo Alto, CA 94306
(415) 327-3280



Atari is a registered trademark of Atari, Inc. Apple II is a registered trademark of Apple Computer, Inc.

soft card or language card).

Apple Computer describes *Mix and Match* as its family package. Each of the games it contains—*Mix and Match*, *Animal*, *Layer Cake*, and *Raise the Flags*—can be enjoyed by learners of various ages.

In *Mix and Match*, players construct new Muppets out of the top, middle, and bottom sections of six familiar ones. The presence of Big Bird, Ernie, Cookie Monster, and the rest gives this familiar game that extra something.

Animal is a neat version of the program on the system master disk. It puts the player in the role of teacher and the computer in the role of eager student. Because the computer only recognizes a few animals at first, it's the player's job to teach it new ones—to identify what makes various animals different from one another so the computer can recognize all of them later on. Teaching becomes a great way of learning.

In *Layer Cake*, a logic game reminiscent of *Tower of Hanoi*, the player is faced with three layers of a cake on one of three plates. The task is to transfer the layers of the cake to one of the other plates in the fewest possible moves and without crushing any of the smaller layers under the larger ones. The "fewest moves" for a three-layer cake is seven, but success on any level is rewarded. The number of layers can be varied, and, over time, players will begin to discern the logic pattern involved.

Raise the Flags is an appealing version of *Hangman*. Two lists of words are provided, and by means of a fifth program, *Word Editor*, players or parents of players can create their own word lists. The words to be identified can contain three to six letters, and a player is entitled to guess seven incorrect letters before the computer will reveal the answer. Word lists can contain up to forty-five words.

The *Mix and Match* programs are easy to use, reinforcing, uncluttered, and virtually crash-proof. And it's evident that the people who created them honestly believe that learning is fun.

The manual is a genuine resource. It provides information and instructions that inexperienced computer users will find helpful, and it suggests noncomputer games that children and parents can make themselves. Emphasizing the same concepts and skills as their computer counterparts do, these homemade games encourage creativity and provide for hours of rainy day fun in the bargain.

Mix and Match, by Children's Television Workshop for Apple Computer (20525 Mariani Avenue, Cupertino, CA 95014; 408-996-1010). \$50.

Ernie's Quiz. By Children's Television Workshop. In typical CTW style, *Ernie's Quiz* refers not just to one game but to a collection of four, each of which covers a different subject.

Guess Who helps kids with image recognition. One at a time the Sesame Street Muppets take shape, appearing one (lo-res) dot at a time. The object of the game is to guess, before the entire picture appears, which of the Muppets it is. A color television set or monitor is recommended for all the games, especially this one. Since the Muppets are made up of different basic colors, color recognition helps the child identify which Muppet is being displayed.

Jelly Beans is a simple counting skills exercise. A random number of jelly beans appear in the bean jar and the child is asked to count how many. The use of different colored jelly beans helps prevent confusion over which ones have been counted and which have not.

Using the game paddles, it's possible to create numerous faces in *Face-It*. The player gets to choose among various head shapes, hair designs, eyes, noses, and so on and then selects what colors different body parts will be.

The fourth game, *Ernie's Quiz*, is a multiple-choice quiz on how well the child knows the Sesame Street Muppets. Three clues are given, one at a time, and the child guesses which of three Muppets is being described in the clues. If the guess is incorrect, the display lets the child know that it isn't that one, thus eliminating one possibility.

One of the strongest points of the package is its stress on the positive. Instead of, "No, that's wrong. Try again," the child is given encouragement. The child is never told that the response typed is wrong, only that the computer's answer isn't the same.

For example, in *Guess Who*, if the child guesses "Grover" incorrectly, the program responds with, "It doesn't look like Grover to me." Or if a guess is made that is not even one of the Muppets, the program fills in that name in its reply.

Likewise, in *Jelly Beans*, an incorrect guess is greeted with, "That's not how many I counted," rather than with, "No, it's not eight. Count again."

When the child guesses correctly, the Muppets respond with congratulatory messages. In *Guess Who*, messages reflect the personality (muppetality?) of each Muppet. ("Yep, me Cookie Monster!" or "Okay, so you guessed it was me, Oscar. What's it to you?") If the child never guesses the Muppet, the image eventually appears with a message telling who it is.

Three out of four of the *Ernie's Quiz* games have definitive endings to them and never leave the child hanging, unsure of what the answers were. In *Jelly Beans*, however, it's possible to get hung up. If the correct number of jelly beans is never entered, the game will go on until the reset key is pressed or the computer is switched off.

Ernie's Quiz can be played by kids of ages four to seven without the aid of an adult. Instructions for each game appear on the screen and in the manual. The directions in the manual are accompanied by life-size illustrations of which key(s) to press and screen samples from the games.

Each game on the disk is supplemented by descriptions of two or three games that don't require a computer. *Ernie's Quiz* is meant to introduce basic concepts and the games described in the manual will help children expand their understanding of those concepts.

Ernie's Quiz, by Children's Television Workshop for Apple Computer (20525 Mariani Avenue, Cupertino, CA 95014; 408-996-1010). \$50.

Bop-A-Bet. By Mike MacChesney, Al Lowe, Rae MacChesney, and Margaret Lowe. Here's another group of educators who recognize the futility of educational software running in the textbook emulation mode. Instead of another curriculum-based package that merely turns the Apple screen into the electronic equivalent of a textbook page, *Bop-A-Bet* is a learning game based on maze-chase game techniques.

What does learning have to do with *Pac-Man*? Lots in this context. The learner here is the tyke trying to master the alphabet. The lesson is letter recognition and alphabetic order. Run the cursor over the letters of the alphabet in order and, in the process, bop 'em a good 'un. It's a lot better than staring at a string of characters on a page, and, in the electronic age, it's probably more effective than the books with one letter and one picture on a page. Remember the "C" and "C is for cat" books?

One of the things youngsters do best is emulate their elders. So at this stage in society, *Pac-Man* style learning is probably more appropriate than McGuffey's readers in most households, even if the learning is then more subliminal and less conscious.

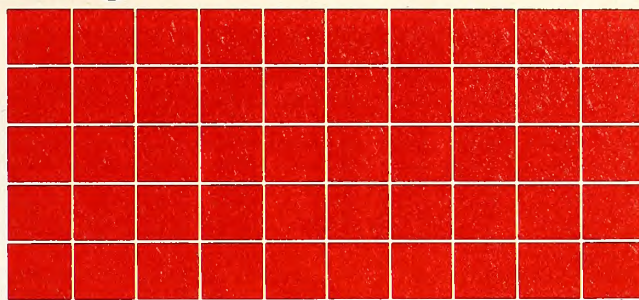
The authors of *Bop-A-Bet* clearly have the right idea. To use the microcomputer as a learning tool, one should use all the capacities of the machine—color, animation, and good graphics. The only quarrel from a technical standpoint with the execution of this game is that the cursor could be more responsive to the keyboard instructions.

Sunnyside Soft doesn't have the bucks to promote their software in the same fashion as Children's Television Workshop, Spinnaker, the Learning Company, Control Data, SRA, and Xerox. But those other guys might do well to pay heed. If Sunnyside can maintain good, fresh ideas and spruce up the efficiency of their code, they could well be a pacesetter in the area that looks to be the fastest growing segment of micro-computerdom in 1983.

Bop-A-Bet, by Mike MacChesney, Al Lowe, Rae MacChesney, and Margaret Lowe, Sunnyside Soft (5815 East Parkside, Fresno, CA 93737; 209-251-5400). \$34.95.

Micro Mother Goose. By Classic Family Software. Old King Cole, Little Miss Muffet, and the Three Blind Mice on the computer? Yup—for the three-year-old contingent (and up). Software Productions's first product, *Micro Mother Goose*, is intended to open up the world of microcomputers to very young children.

Micro Mother Goose consists of nine Mother Goose rhymes and three simple games loosely tied to nursery rhyme themes. Each rhyme appears line by line on the screen in upper and lower case letters and is illustrated with an appropriate hi-res picture. A slowed down musical rendering follows immediately after the text of the rhyme. The rhymes are easy to read, the illustrations are effective and fun, and the music is about what you can expect from the a capella Apple speaker—fine but not great.



Cross Clues:TM The unique word challenge game.

It offers intellectual stimulation arcade games can't match . . . with all the excitement.

Fast-action fun isn't just for mystery or arcade games any more. *Cross Clues* is a word game that tests more than mere reflexes. It's the mind-challenging evolution of the crossword puzzle, with beat-the-clock excitement. The playing tempo is lively, but you decide how fast you want to go. The computer "umpires" while you compete with another player for hidden words, coaxing clues from the computer. Since a clue helps your opponent too, suspense builds till the end, when the best combination of skill, intellect, timing and luck wins.

If you're ready for an even greater challenge, try *Concentration Crosswords*TM, a game that offers 3 levels of difficulty and 3 ways to play—for even the most demanding word whiz. Again, you compete against the clock to uncover hidden words. But once discovered, they disappear, to test your memory. Here, a combination of word skills, intellect, memory and luck determine the winner.

Both games offer 50 mind-boggling puzzles that appeal to young teens through adults. Try them both! You may find you've matched wits with monsters and space critters long enough.

To obtain these word games, see your local dealer. Or send in the convenient order form below.

Compatible with Apple II® 48k disk, and IBM Personal Computer, 64k, disk drive, PC DOS.

For faster service, call Toll Free 800/621-0476. In Alaska, Hawaii or Illinois, call 312/984-7000.



SCIENCE RESEARCH ASSOCIATES, INC.
155 N. Wacker Dr., Chicago, IL 60606

A Subsidiary of IBM

Apple II, Apple II Plus, Applesoft, are registered trademarks of Apple Computer Inc.

Yes! Please send me these Exciting games today!

Quantity _____

_____ Cross Clues \$35.00*

☐ for Apple 88-500 ☐ for IBM 88-510

_____ Concentration Crosswords \$35.00* ☐ for Apple 88-508

Check method of payment:

☐ VISA # _____ Exp. Date _____

☐ Mastercard # _____ Exp. Date _____

Name _____

Street _____

City _____ State _____ Zip _____

Signature _____

*Plus shipping, handling, and local taxes, if applicable.

Mail to: SRA, Software Products Dept., 155 North Wacker Drive, Chicago, Illinois 60606

All hands on deck

for a swashbuckling adventure with the legendary warship – **Old Ironsides!**

A NEW experience in arcade-quality graphics in a two-player game for the whole family!

Your arch enemy is armed to the teeth with deadly firepower. A shoot-out could blow you to smithereens.

You're ready for the onslaught! Your warship is perfect – masts, compasses, cannons, broadsides and powder magazines. Your strategy is flawless!

But you've got more than your opponent to contend with! Hiding in the fog by drifting off the screen can snarl even the best tactics!

This is a test of skill and daring unmatched in any other micro-computer game! Your every move is critical. One false step and... KABOOM!

Use keyboard or paddles to play this spellbinding game. *Plus...the special Freeze Frame feature stops and starts the action at any point.* It's perfect for everyone – the controls are simple, but the strategy and tactics at your fingertips are truly awesome! *By Richard Hefter and Jack Rice.*



What you see is what you get!

Unlike other programs, where the pictures on the packaging and in the advertising bear no resemblance to the screen images, this program delivers precisely what's promised...

- Better than arcade-quality graphics and sound!
- Bright, interest-grabbing packaging!
- FREE full-color 14½" x 20" Old Ironsides poster
- FREE 32-page Log Book with space to record wins and losses, secret strategies and tactics

Look for OLD IRONSIDES™ in finer computer stores everywhere. Dealers are invited to inquire by calling toll-free 1-800-852-5000.

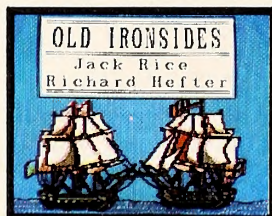
If there is no store near you, Visa and MasterCard holders may order by calling toll-free 1-800-852-5000. Or, send a check or money order for \$39.95 for each program, plus \$2.00 for shipping and handling (where applicable, please add state sales tax) to Xerox Education Publications/Weekly Reader, Dept. 15A, 245 Long Hill Road, Middletown, CT 06457.

Apple II and Apple II Plus 48K 3.3 DOS



NEW from
Optimum
Resource, Inc.
for the Apple®!

Old Ironsides™ is a registered trademark of Optimum Resource, Inc.
Apple and Apple II are registered trademarks of Apple Computer, Inc.
AF/MS2-S



Distributed by

Xerox Education Publications
Weekly Reader

Computer Software Division

This program practically runs itself. And because visual cues (such as color coded menus and a pointing finger next to the current rhyme choice) are given, children don't have to be able to read in order to get the program to do what they want it to.

The games are played using paddles or joystick. There's *Lamb Scramb*, in which Mary's little lambs need protection from the wolf and help getting through the hedge; *Splat*, which features one hundred falling eggs (Humpty Dumpty's, all of them); and *London Bridge Out*, a *Little Brick-Out* variation. All of the games start out very easy and grow more challenging as children show that they are ready to move to the next level of difficulty.

The manual, designed for parents, is excellent. It is attractive, well written, and thorough, and it does a good job of explaining both the how and the why of the program. It also includes useful information about how to set up the computer and how to ensure that your own kids and those in the neighborhood know how to treat the computer.

The program is not copy protected. Users are encouraged to make their own "working copy" immediately and are even supplied with an extra program label to affix to it. The package also includes a computer dos and don'ts poster and Mother Goose stickers.

It's obvious that care and thought went into the creation of this package. Two things would have added to the program's flexibility—a pause between the end of the rhyme text and the start of the music and a sound-off option for times when the kids want to play but parents don't want to listen.

Micro Mother Goose, by Classic Family Software, Software Productions (2357 Southway Drive, Box 21341, Columbus, OH 43221; 614-486-3563). \$39.95.

Rocky's Boots. By Warren Robinett and Leslie Grimm. Remember when it was fashionable to say that the main purpose of school was to teach kids how to think? This was generally said to justify the teaching of facts and processes that were boring to kids who didn't see why they'd ever need to know them. The principle should be true, of course, even if it isn't always practiced, but the justification doesn't work. Learning that the capital of Malaysia is Kuala Lumpur may be romantic, but it won't be a burning issue in most kids' adult lives—or, if it becomes one, they'll learn it then without effort because it is. Learning it at age ten won't teach someone to think—only to memorize.

The Learning Company believes in the principle without justification. In *Moptown*, in the Gertrude series, and now in *Rocky's Boots*, the programs home in on the thinking processes directly, and they make them fun. Kids learning with Gertrude and Rocky learn the tremendous delight of having their own minds function well—of tackling difficult problems, working them through, and solving them.

Presenting difficult problems that require logical thinking isn't so difficult to do. The hard part, which the Learning Company solves, is making hard problems not loom hard—even seem appealing—without taking away the sense of accomplishment that solving hard problems can bring.

The concepts of logic, with all the details of logic gates—and, or, not, electric surges and glitches, and flip-flops—are introduced so simply and naturally in *Rocky's Boots* that the child just can't feel the terror and frustration many adults have felt when introduced to these concepts.

By the end of *Rocky's Boots*, the child is attempting and solving complex plottings of logical gates to achieve configurations that accept or eliminate different colors and shapes. In the child's eyes, of course, she's building a hi-res machine to accept all yellow Pac-Men and blue ghosts, to kick out all ghosts of other colors, and to ring a bell and kick out any other-color Pac-Men; or perhaps some even more complex arrangement.

If you think this too much for a seven-year-old to handle (the Learning Company lists *Rocky's Boots* as being suitable for kids age seven and up), just try it with one. If he's mastered *Gertrude's Secrets* or *Puzzles* first, he's apt to leave you eating his dust.

The Learning Company asks a high stipend for its programs; but a good mind that knows how to delight in its own effort is worth much, much more.

Rocky's Boots, by Warren Robinett and Leslie Grimm, the Learning Company (4370 Alpine Road, Portola Valley, CA 94025; 415-851-3160). \$75.

Schoolhouse Apple reviews were contributed by Al Tommervik, Margot Comstock Tommervik, Jean Varven, and Matthew Yuen.



Free Enterprise™ A business management game

You run your own company making decisions based on economic factors and the actions of competitors.

It's your opportunity to sit on top and run a corporation. *Free Enterprise*, based on an IBM-developed simulation for training top-level managers, is as surprising and demanding as the real world.

It lets you face the same on-your-toes challenges you would in running a real business: pricing products, determining budgets for advertising, production, plant improvement, and R&D. Even securing bank loans and deciding on stockholder dividends. You use computer generated reports to make decisions. But if you're wrong you could go bankrupt. Only the shrewd survive!

Free Enterprise can be played at three competency levels so novices can compete with the more experienced, and from one to six can play. It's the perfect chance to learn about the free enterprise system — to practice business strategies — and to enjoy it — with no risks.

Simulation components: disk, user's manual, pad of 50 record sheets, and pad of 50 decision sheets.

To obtain *Free Enterprise*, see your local dealer or send in the order form below.

Operates on Apple II Plus® with 48k RAM and disk drive (DOS 3.3): A printer is strongly recommended.

For faster service, call Toll Free 800/621-0476. In Alaska, Hawaii or Illinois, call 312/984-7000.



®SCIENCE RESEARCH ASSOCIATES, INC.

155 N. Wacker Dr., Chicago, IL 60606

A Subsidiary of IBM

Apple II Plus is a registered trademark of Apple Computer, Inc.

Yes! Please send me Free Enterprise today.
Quantity _____

_____ Free Enterprise \$100.00* each

☐ for Apple 88-1601

Check method of payment:

☐ VISA # _____ Exp. Date _____

☐ Mastercard # _____ Exp. Date _____

Name _____

Street _____

City _____ State _____ Zip _____

Signature _____

*Plus shipping, handling, and local taxes, if applicable.

Mail to: SRA, Software Products Dept., 155 North Wacker Drive, Chicago, Illinois 60606

A Schoolhouse Apple Tutorial

LOGO

JIM MULLER

How can several hundred children, each with different talents, interests, and motivation, find the opportunities to discover their potentials when the school they attend has but a handful of computers? Will only those students who attend schools with very low computer-to-student ratios enjoy the learning potential the computer offers?

A related problem occurs when children's levels of interest at the computer are markedly different. Some kids take to computers like ducks take to water. Others need considerable guidance and structure if they are to make the most of the learning experience. Translating the abstractions of the cybernetic world to the real world—and vice versa—is a bit much for some children.

These problems have much in common with those of a teacher who's faced with twenty youngsters, a forty-five minute class period, and one computer. Unstructured self-exploration is totally impractical in such a real-world situation. But that doesn't mean that Logo and one computer can't be used effectively.

Logo Activities off the Computer. In the November issue, we published a variation of the instant single-keystroke procedure that's being used by developmentally disabled youngsters. This procedure is also very useful in helping preschool and kindergarten students to discover the world of the cybernetic turtle.

For some children, however, moving from the doodling world of the single-keystroke procedures to Logo programming is a bit too abstract.

14422 S.E. 132nd
Renton, Washington 98056
(206) 228-6691

HIGHLANDS EZ-LEDGER 4.0



EZ-LEDGER is the ideal record keeping system for somebody running a small business out of their home or the self-employed professional. **EZ-LEDGER** uses the simplest form of bookkeeping possible. Single entry bookkeeping requires only posting transactions either under **INCOME** or **EXPENSE**.

EZ-LEDGER will keep track of expense items under any one of 99 user selected tax codes plus keeping all year-to-date and monthly running totals for each of the selected items. Expense items may be entered under **DEDUCTIBLE** or **NON-DEDUCTIBLE** type codes.

EZ-LEDGER is a strictly cash system. i.e. if you pay out monies (check, cash, credit cards etc.) then the transaction is posted under **EXPENSE** and if you receive monies then record them under **INCOME**.

EZ-LEDGER will produce **INVOICES** with an automatically incremented invoice number and then automatically post the data to an **ACCOUNTS RECEIVABLE** 'holding' file or directly to **INCOME** and update all totals.

EZ-LEDGER will support 80 or 132 column printers and one or two disk drives. The printer is needed for producing invoices, but optional on all other reports.

EZ-LEDGER requires 48K ram, APPLESOFT rom and DOS 3.3.

EZ-LEDGER ON DISK..... \$60.00

EZ-INVOICE is a simple, easy to use invoice generating program which will store the invoice on disk for later recall and allow you to reprint or edit the invoice at any time.

EZ-INVOICE includes a versatile key-board macro capability which allows you to define client names or key items once and then insert them into the invoice by entering only a 3 digit user defined code, thus saving hours of retyping.

EZ-LEDGER & EZ-INVOICE ON DISK..... \$89.95

SEE YOUR LOCAL DEALER OR SEND CHECK TO

HIGHLANDS COMPUTERS, INC.



COMPUTERS

Washington residents add 6.4% sales tax.
Applesoft and Apple are registered
trademarks of Apple Computers, Inc.

One tool that has proven to be quite valuable is Big Trak, the programmable truck from Milton Bradley.

Big Trak is about thirteen inches long. It can be programmed to move forward, back, and right, much the way you can program the turtle on the screen with the **FORWARD**, **BACK**, and **RIGHT** commands. Programming the truck to avoid tables and chairs provides a very real, concrete experience for young children. Then, if you want to work on building the concepts of shapes, put masking tape on the floor to provide a track for the truck to follow.

Another idea that works is to visit a newspaper printer and pick up roll-ends of paper. Then tape a marker to the back of the Big Trak so it can be programmed to draw as it moves over the paper. If you use the Big Trak Transport, a trailer accessory, you can add **PENUP** and **PENDOWN** commands to Big Trak with only minor modifications.

Another way to make turtle shapes come alive for kids is to create them first on the screen. Print them out, and then have the youngsters cut them out and trace them onto colored construction paper. Ask the children to trace the shapes without lifting their pencils from the paper. In doing so, children will move their pencils through the same path as the turtle.

Once you have a variety of basic shapes—squares, rectangles, triangles, and circles—ask the children to assemble them into pictures. Show them how complex structures can be assembled from simple shapes. Soon you will see rocket ships, houses, cars, and other objects appear. After they have had the chance to build complex shapes, take a trip through the neighborhood to discover these basic shapes in nature. Trees, shops, windows, roads, leaves, flowers, and airplanes can all be assembled from basic geometric shapes.

The mathematical concepts of how one, two, and three dimensional objects can move through space can be very difficult for young people to understand. A loop of rope and the computer can help make these ideas come alive more easily.

Draw a clock on the floor that's large enough to allow a child to stand at any hour with another in the middle representing the turtle. Place a child at 12:00 with the turtle in the middle and stretch the rope between them. The rope can then be measured in one dimension—length. Place another child at 3:00 and stretch the rope among the three of them. What would be the resulting shape?

Add a fourth child outside the circle a step or two back from 1:30. Then what shape do you have?

The next step is to have the turtle remain still while each of the other three advances one hour. Rather than standing at 12:00, 3:00, and outside 1:30, the children are now at 1:00, 4:00, and outside 2:30. What has happened to the square?

Next, have another child use turtle graphics to duplicate the clock and square on the computer screen. Show how the children moved through one-twelfth of the clock, or one-twelfth of a circle. How many degrees is that? Now have the turtle turn **RIGHT 30** and draw a square. What happens? Have the children on the computer and those on the clock continue to rotate through each of the twelve hours. Don't erase any of the squares from the computer screen. What does the picture on the screen look like?

If drawing a clock on the floor isn't convenient, cut a piece of pine shelving into a square and draw a clock on the board. Hammer nails into the hour positions and the center. Put a loop into one end of a string and loop this over the center nail. The string is now ready to take a turtle-walk around the clock, creating all sorts of repetitive shapes.

These exercises should give you some ideas about how to make mathematics come alive for young people so they will come to know math as a universal language for solving problems and developing analytical skills. The computer and Logo are fascinating, imaginative tools that help this learning process along. But they are only tools, tools that need to be used productively and efficiently within a structured learning experience.

Illustrations and sample procedures have been deliberately omitted from this article. The descriptions are also purposefully brief. We hope you will explore these ideas and modify them to your own purpose.

Good Grief. Last month's Logo installment was written by Donna Bearden, not Jim Muller.



NOW THE COMPUTER AGE IS THREE TO THIRTEEN.



With Computer Learning Games™ from The Learning Company and an Apple computer, you can give your kids one of life's greatest gifts — the love of learning.

As the company that makes learning playful, we can help you give your kids a head start on life.

Younger kids will learn direction concepts like "above or below" and "left or right." Older kids acquire logic skills while creating patterns

with colors and shapes. They'll also learn computer-age skills like number plotting and computer chip circuit design.

All learned from creative games using imaginary characters and lively themes. From Juggles' Rainbow to Gertrude's Puzzles, there are six packages in all.

So if you've got kids aged three to thirteen, take them to your local Apple dealer and try our learning games.

Then you'll see how exciting learning really can be.

Please send me a copy of your computer learning games catalog.

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

The Learning Company
4370 Alpine Road, Dept. 104
Portola Valley, CA 94025
(415) 851-3160





Unless otherwise noted, all products can be assumed to run on either Apple II, with 48K, ROM Applesoft, and one disk drive. The requirement for ROM Applesoft can be met by RAM Applesoft in a language card. Many Apple II programs will run on the Apple III in the emulator mode.

□ **The Computer: Extension of the Human Mind** is a compilation of twenty-three papers presented at a conference of the same name in July 1982 at the University of Oregon. It's available from the **ERIC Clearinghouse on Educational Management** (University of Oregon, Eugene, OR 97403; 503-686-5043). 238 pages. \$10.

□ It just keeps expanding. **Algebra 4** is the latest in the series from **EduWare Services** (Box 22222, Agoura, CA 91301; 213-706-0661). This one covers graphing, linear equations, variation, solving systems of linear equations, and inequalities. Like its predecessors, **Algebra 4** offers a choice of learning styles for each student. It's all done in hi-res graphics with customized upper and lower case fonts. \$39.95.

□ The first of three **Computer Swap America** (Box 52, Palo Alto, CA 94302; 415-966-6546) shows will be held in San Jose, California, at the Santa Clara County Fairgrounds on Saturday, February 5, 1983. Sold there are overstocked, surplus, or obsolete items, and many new products. Hours are from 10:00 a.m. to 6:00 p.m. Admission, \$5. You might also mark your calendar for the West Coast Computer Faire that takes place March 18 through 20 at Brooks Hall in San Francisco, California. Admission, \$15.

□ **Binary to Applesoft** is a decompiler from **Simulation Software** (6035 North Maplewood, Chicago, IL 60659) that lets you see binary programs in a Basic format. No programming knowledge is required. \$60.

□ **Tax Mini-Miser**, a tax planning package by **Sunrise Software** (San Francisco, CA), is being marketed by **Starsoft** (4984 El Camino Real, Suite 125, Los Altos, CA 94022; 415-965-8000, 800-882-8000). The program computes the effects of up to six alternative tax strategies over a one-year period, or one strategy over a period of up to six years. Then it tells you the best computation method for each tax year or strategy. \$295.

□ Five new programs, just out from **Howard W. Sams** (4300 West 62nd Street, Box 7092, Indianapolis, IN 46206; 317-298-5400): **Music Games** incorporates twelve different programs. Topics covered include movement on the staff, recognition of notes and rhythms, measures, and musical pitches. \$39.95. **PDQ** is a data handler that allows you to create screens of information with up to 840 characters per screen. Up to 114,500 characters may be saved per disk in four files. You can load, manipulate, search for, and save all data. \$59.95. Eighteen mathematical programs designed to figure and print reports for loan, savings, and investment plans are what **Financial Facts** is all about. The programs cover depreciation, future value, interest rates, loans, payments, and investments. \$59.95. "Protected by a robotic overseer, the fortress, with its miles of corridors, false chambers, death traps, transport devices, and one-way doors, is impregnable to all but one . . . the little Vario 500 egg-shaped robot you become." It all happens in **The Caves of Olympus**, an adventure game that requires quick action and careful plotting and reasoning. \$39.95. **Money Tools** is a home or small business financial record-keeping and reporting system. You can create 120 budget areas and twelve recording periods that handle 500 transactions per period. \$59.95.

□ **Creative Insight** (69 Logan, Denver, CO 80203; 303-733-8372) puts out a portable rolltop desk for the Apple. Constructed of solid oak and oak veneer plywood, the desk locks up when it's not being used. Inside the desk is a sliding drawer for the Apple, and there's room for two disk drives. Its knock-down design allows for easy shipping, storage, and assembly. \$345.

□ You can have your personal **Family Medical Advisor** inexpensively. **Navic** (Box 14727, North Palm Beach, FL 33408; 305-627-4132) presents this program to help you identify more than 180 illnesses. Not meant to replace an experienced physician, it will analyze overt symptoms using your "yes or no" answers to a series of questions as its data. \$37.50.

□ **High Technology Software Products** (Box 14665, Oklahoma City, OK 73113; 405-478-2105) has enhanced **PACE**, their general-purpose estimating program, to work with the Corvus hard disk system. In the new version, the number of estimates that can be stored has increased 500 percent. **PACE** can now store and retrieve information on up to 2,000 items. \$395. High Technology has also released an enhanced version of their **Store Manager**, once known as **The Cashier** from Apple. The new version reports, sorts, and searches records much faster than the old version. Current **Store Manager** owners can get updates for \$35. The price for new buyers is \$250.

□ **Apple Computer** (20525 Mariani Avenue, Cupertino, CA 95014; 408-973-3019) has brought out a new version of **Dow Jones News and Quotes Reporter**. The new version gives investors access to all database services currently provided by the Dow Jones News/Retrieval Service, as well as to future services. What's more, the revised software supports eighty-column displays and autodial modems, and it allows you to log on automatically through Tymnet, Telenet, and the Canadian Bell System's Datapac. Requires modem. Updates for current owners, \$40. If you buy it new, it's \$135.

□ Math teachers might be interested in **Multiplication Facts Diagnostic** from **Disk Depot** (731 West Colorado Avenue, Colorado Springs, CO 80905). Not only does the program diagnose students' weaknesses and strengths, but it will also write a prescription to cure their problems. There are nine levels of achievement; the teacher selects the facts to be learned, the time spent on learning, and the number of practice problems. Once the student masters a level, a Certificate of Mastery is issued on the printer. \$49.95.

□ Read **Softalk** from cover to cover, but if you must know what other magazines are printing you can get summaries of their articles from the Microcomputer Index, an on-line file from **Dialog Information Services** (3460 Hillview Avenue, Palo Alto, CA 94304; 800-227-1927, 800-982-5838 in California). Records include a short summary or abstract of the article and complete information about its source, such as the author, title, and publication date. Material indexed includes general articles about microcomputers, software and book reviews, applications, and new product descriptions, not unlike this one. \$45 per hour. Dialog's second new database is the International Software Directory, which lists most commercially available software. Records consist of short descriptions of each item with indexing by broad categories. The directory covers business, hobby and entertainment, and games. Names and addresses of software suppliers and purchase prices are also included. \$60 per hour.

□ **Apple Writer II Pre-Boot** by **Compular** (10521 Deodara Drive, Cupertino, CA 95014) provides you with the capability to use the Smart-term eighty-column card. All **Apple Writer II** functions and capabilities are supported. \$24.95.

□ Now you can save money on federal taxes and tax preparation services by using **TaxCut** from **United Micro Systems** (100 North Stone, Suite 1100, Box 3035, Tucson, AZ 85702; 602-622-4751). The program lets you test outcomes of hundreds of tax-related alternatives. When data is entered, you can print out the complete return, including many schedules that will be ready to sign and mail. **TaxCut** can help you make tax-related decisions about IRAs, Keough plans, and investment in business equipment. You also get a year's subscription to **Taxtips**, a monthly pub-

lication designed to keep you informed of changing tax laws. \$250.

□ Quit playing with the power tools so you can try out *The Programmer's Power Tools (PPT)* from **CE Software** (801 73rd Street, Des Moines, IA 50312; 515-224-1995). *PPT II* expands the functions of Applesoft, and *PPT III* does the same for Business Basic. *PPT* (for either Apple) allows formatted numeric output, fast sorting and searching of string arrays, packing of numeric data for efficient disk storage, and creation of flexible input routines. *PPT II*, \$59.95; *PPT III*, \$79.95.

□ It's arts and crafts time with the new series from **Nova Software** (Box 545, Alexandria, MN 56308; 612-762-8016). *Finger Painting* lets children learn by using a joystick to finger-paint with all the hi-res colors. Any part of the painting can be erased if you goof up. You can even save those paintings to be displayed later. \$14.95. Next is *Color Book I*, which contains ten pages for the child to color with joystick-controlled crayons. These also can be erased in part, saved, and displayed later. \$19.95.

□ **Waverly Dental Group** (10824 North 142nd Street, Waverly, NE 68462; 402-786-2221) sells the *Dental Management System*, a system for practices of one or two dentists. The system functions include billing, receivables, patient recall, and management reports. It will handle more than 2,500 patients and 170 American Dental Association codes. To run the system, you'll need two disk drives and an Applejuice power supply. Under \$7,000.

□ *Grapple* is the third in a series of games written in GraForth by **Insoft** (10175 S.W. Barbur Boulevard, Suite 202B, Portland, OR 97219; 503-244-4181). *Grapple* tests your speed and cunning in squelching a galactic jailbreak. You must stop the Horrible Hoppers, Sneaky Snerds, and Flippant Flyers before they escape the intergalactic prison. \$29.95.

□ Four books are available from **Alfred Publishing** (15335 Morrison Street, Sherman Oaks, CA 91403; 213-995-8611). *How To Use VisiCalc/SuperCalc* explains the two most popular spreadsheet programs that help you forecast and budget. Appendices list feature-by-feature comparisons of the two programs plus other spreadsheet programs and manufacturers. \$2.95. *Understanding Database Management* uses extensive diagrams to explain how databases are established and maintained. \$2.95. *Understanding APL* introduces this computer language that can solve the most difficult mathematical and business problems in just a few statements. \$2.95. *Understanding LISP* is a guide to help you comprehend this language of artificial intelligence that can manipulate symbolic expressions. The book is full of examples, problems, and helpful figures. \$2.95.

□ Now, users of *VisiCalc* can have easy and accurate access to worldwide economic and business information in a format for *VisiCalc* analysis. **VisiCorp** (2895 Zanker Road, San Jose, CA 95134; 408-946-9000) introduces *VisiLink*, a program that electronically transfers selected information from the world's largest private business databank, Data Resources. Information is in the form of *VisiCalc* worksheets called DataKit worksheets which are also compatible with *VisiTrend/Plot* or *VisiPlot* programs. Requires two disk drives. \$250.

□ **Management Science America** (3445 Peachtree Road N.E., Atlanta, GA 30326; 404-239-2000) releases its first product, the *MSA Executive Peachpak*, a set of applications featuring a direct link to MSA mainframe systems. *PeachCalc* is an electronic spreadsheet for modeling, analysis, and row/column calculations. *The Business Graphics System* offers full-color graphics with a plotting option to display bar, line, area, and pie charts. *PeachText* lets you produce reports, add footnotes to mainframe reports, and make changes to documents. It includes a spelling proofreader and the Random House Dictionary and Thesaurus. *List Manager* is a personal database for address files, schedules, and personal notes. *PeachLink* gives you a link to MSA mainframe systems. Data that's captured by *PeachLink* can be used with all the other *PeachPak* modules. \$3,750.

□ The Quartet from **Vista Computer** (1317 East Edinger, Santa Ana, CA 92705; 714-953-0523) gives you the capacity of four Apple disk drives in the space of one. The Quartet package includes two thinline drives that will perform in dual side forty track or single side thirty-five track modes, a controller, and software patches for DOS, CP/M, and Pascal. \$699.

□ **Judco Enterprises** (Box 963, Scottsdale, AZ 85252; 602-990-1715) would like you to know that microcomputers, software, data and word processing, telecommunications, and peripherals will all be found at the

The Home Accountant:TM It can cover your assets.

If you're concerned about your money, it's important to know not only where your assets are but whether they're working for you.

By tracking up to 200 different budget categories,* 5 different checking accounts and all the credit cards you can carry, The Home Accountant will let you know where you stand on any given day. It will even print your checks, your net worth statements and financial statements.

Additionally, full-scale color graphics of actual vs. budgeted expenses give you an instant overview of your financial condition.

The Home Accountant can save you enough time and money to more than justify its cost. And the experts agree:

“Of the five [home financial] programs reviewed here THE HOME ACCOUNTANT is the most thorough and powerful. Considering how much it can do, it's remarkably easy to use.”

—Softalk, Apple, April, 1982.

“Personal-finance programs, have for the most part, a manual file system. Only THE HOME ACCOUNTANT is fully automatic.”

—Popular Science, December 1982.

“The program itself does just about everything you'd ask of a personal finance package.”

—Popular Computing, November, 1982.

THE HOME ACCOUNTANT. The #1 bestselling personal finance program in the world.

Available for: Apple II, IBM
Personal Computer, Atari 400/
800, Osborne, TRS-80 Model III,
Commodore VIC 64.

*Actual budget capacities will vary with each computer.

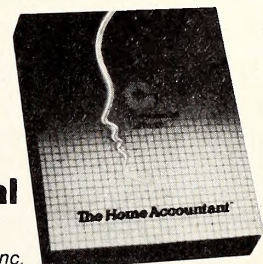


**Continental
Software**

A Division of Arrays, Inc.

Continental Software, 11223 South Hindry Ave.
Los Angeles, CA 90045, (213) 417-8031.

The Home Accountant is a registered trademark of Continental Software. Apple II is a registered trademark of Apple Computer, Inc. IBM Personal Computer is a registered trademark of IBM Corp. Atari 400/800 are registered trademarks of Atari, Inc., a division of Warner Communications, Inc. Osborne is a registered trademark of Osborne Computer Corp. TRS-80 Model III is a registered trademark of Tandy, Inc. Commodore VIC 64 is a registered trademark of Commodore Business Machines, Inc.



Second Annual Pacific Computer Expo February 18 through 21 at the San Diego Convention and Performing Arts Center. The Expo will feature 150 exhibitors, and seminar sessions will offer more than one hundred presentations covering all aspects of computer technology.

□ **SSM Microcomputer Products** (2190 Paragon Drive, San Jose, CA 95131; 408-946-7400) has announced the SSM Apple ModemCard to complete its data communications product line. The ModemCard features half and full duplex at 110 or 300 baud, autoanswer and autodial, Touch-Tone and pulse dialing, and audio monitoring. \$299.

□ **Behavioral Engineering** (230 Mount Hermon Road, Suite 207, Scotts Valley, CA 95066; 408-438-5649) has two packages to teach touch typing in a new way. *Typing Strategy* teaches you to associate the character to be typed, the finger to be used, and the position of the character on the keyboard with one another. Once the relationships have been established, two games, *Drag Race* and *Time Bomb*, are used to help develop typing speed. \$29.95. Stay up late nights with *Letter Man*, a game that teaches typing and increases typing speed through play. It's the familiar maze game in which you eat the letters while being chased by gobblers. \$29.95.

□ **CP+**, the product by **Taurus Software** (3685 Mount Diablo Road, Suite 251, Lafayette, CA 94549; 415-283-7222) that allows you to control your system with English-language commands rather than with complex CP/M commands, is now being distributed by Softsel. *CP+* is \$150.

□ Gender reversers are available from **B & B Electronics** (Box 475, Mendota, IL 61342; 815-539-5827). Now you can reverse the gender of any RS-232 line to make it compatible with any other accessory. Two models are available, one with both ends male and the other with both ends female. Both models connect all twenty-five pins. \$19.95 each; \$34.95 for both.

□ The TG Track Ball game controller from **TG Products** (1104 Summit Avenue, Suite 106, Plano, TX 75074; 214-424-8568) incorporates the ball-type positioning element for fast, accurate movement of objects on the screen. The track ball has a lower control-to-movement ratio than other types of double axes controls to allow more sensitive positioning for graphics work on the screen. \$64.95.

□ **Electronic Specialists** (171 South Main Street, Natick, MA 01760; 617-655-1532) announces Magnum Isolator, designed to minimize damage and problems incurred as a result of power surges and spikes. The Isolator features four individually filtered sockets and will control electrical pollution for a 1,875 watt load. Each socket can handle a 1,000 watt load. \$181.95.

□ Getting right down to business, **Kengore Corporation** (3001 Route 27, Franklin Park, NJ 08823; 201-297-2526) announces that the New Jersey Business Computer Show will be held March 17 through 19 at the Holiday Inn North, Exit 14 of the New Jersey Turnpike. Featured will be small business systems, desktop computers, word processors, software, and accessories. Strictly business, no hobbyists.

□ **S-C Software** (2331 Gus Thomasson, Suite 125, Box 280300, Dallas, TX 75228; 214-324-2050) has added the *68000 Macro Cross Assembler* to its series of macro assemblers. With it, you can develop programs for the Motorola MC68000 16-bit microprocessor. It assembles Motorola 68000 mnemonics, using the same assembler syntax as in the Motorola reference manual. \$130. *S-C Macro Assembler* owners may purchase it for \$50.

□ A new automated commodity trading system called *Macro-Trend* is available from **Steven E. Bollt** (7420 Westlake Terrace, Suite 1509, Bethesda, MD 20817; 301-365-3737). It generates entry points, exit points, reversals, and protective stops. After the market closes, daily trading data is retrieved via modem from Commodity Systems's database. *Macro-Trend* identifies major trends early. One year lease, \$2,000.

□ You can get a program that covers reading skills typically taught in kindergarten through third grades from **SouthWest EdPsych Services** (Box 1870, Phoenix, AZ 85001; 602-253-6528). *The Reading Machine* contains more than twenty-eight skill levels, ranging from alphabet matching and sequencing to blends and digraphs. Additional features include hi-res graphics, pictures to match words, large upper and lower case letters, and instructional materials for parents and teachers. \$59.95.

□ **Saint Olaf College** (Northfield, MN 55057; 507-663-3139) is hosting the 16th Annual Small College Computing Symposium on March 25

and 26, 1983. The symposium is designed to foster widespread use of computers in small universities and colleges.

□ A three-stage protection from voltage spikes and noise interference is now being offered by **National Field Sales** (Box 230, Broomall, PA 19008; 215-352-9214, 800-345-1280). Stedi-Watt Jr. gives you dual protection of fifty joules on both transverse and common modes. It plugs into a three-wire grounded outlet and will accommodate six plugs. \$79.50.

□ The *Richmond Library Management System* was developed by **Follett Library Book** (4506 Northwest Highway, Crystal Lake, IL 60014; 800-435-6170) to give librarians control of 65,000 items. The system keeps track of book loans, returns, and overdues for 2,650 students and 200 faculty members. It generates daily overdue notices and automatically prevents delinquent borrowers from checking out additional books. Cataloguing books by call number, author, title, accession number, and subject headings is another feature. Under \$1,000.

□ News from **Hayden Software** (600 Suffolk Street, Lowell, MA 01853; 617-937-0200): *Championship Golf* is a realistic, eighteen-hole simulation golf game that can be played by one to four players. Each hole is displayed from two angles—bird's-eye view and side view. A status line is displayed and indicates the hole number, its length, the par number, the ball's distance from the hole, and how many strokes you've taken. You also get twenty clubs to choose from (country club not included), including all popular irons, wedges, and woods. \$24.95. *Bellhop* puts you under the pillbox hat, where your job is to deliver luggage to different suites. A mischievous ghost and grumpy guests keep you on your toes. Elevator racing is a crucial element! \$34.95.

□ And news from **Hayden Book Company** (50 Essex Street, Rochelle Park, NJ 07662; 201-843-0550): *Basic Apple Basic* takes you through Applesoft from beginning concepts to advanced topics. Subject matter is explained with short programs that slowly become larger, more complex ones. More than eighty sample programs are presented. 237 pages. \$12.95.

□ **Sawhney Software** (888 Seventh Avenue, New York, NY 10106; 212-541-8020) offers *Taxmode*, a tax planning system for individual income taxes. *Taxmode* displays the results of tax computations continuously on the screen, and results are updated after each entry, enabling you to see immediately the effects of each item you enter. Multiple report formats allow you to print reports that fit your requirements, including most IRS forms. \$250.

□ **Overbite** (8621 Laurel Canyon Boulevard, Sun Valley, CA 91352) offers Double Data, a heavy-duty metal hole punch with hole guide that doubles the capacity of a floppy disk by punching a notch that lets you use the other side of the disk. No more accidentally punching through the disk itself. \$19.95.

□ The Documentation and Integration of Software into the Classroom (DISC) Project of **Oakland Schools** (2100 Pontiac Lake Road, Pontiac, MI 48054; 313-858-2121) has produced the *DISC Compendium*, a collection of ninety-one software evaluations and documentation. \$20.

□ No shoot-'em-ups here. **Earthware Computer Services** (Box 30039, Eugene, OR 97403) introduces *Star Search*, a game in which players set out to find the origin of a mysterious signal originating from Pluto. Land space probes or send them through the planets' atmospheres. Search for alien life forms along the way, while maximizing your resources. Whichever player turns out the most efficient space commander will win the game. Educator inquiries encouraged. \$45.

□ **Metatek** (12525 Hummingbird Street, Minneapolis, MN 55433; 612-755-9587) announces Metascope, a low-cost data line monitor. The unit can display and store data in asynchronous, byte-oriented synchronous, or bit-oriented synchronous modes at speeds to 19.2K bits per second. Metascope has a built-in capability to generate synchronous clock signals, eliminating the need for modem emulators. \$895.

□ Protect your Apple with the Byte Box, a case from **Kel Tech** (34732 Calle Fortuna, Capistrano Beach, CA 92624; 714-661-0435) that covers the computer and the keyboard. It also has a built-in cooling fan with line surge suppression. There are even plugs for your CRT and printer. \$289.

□ **Voice Machine Communication** (10522 Covington Circle, Villa Park, CA 92667; 714-639-6150) presents the Voice Input Module to add voice input to any Apple II application without having to do any pro-

BASF QUALIMETRIC™ A TOTALLY NEW DIMENSION OF QUALITY.



From BASF comes a totally new level of excellence in magnetic media—the Qualimetric standard, a standard so advanced that BASF FlexyDisks® are confidently backed by an extraordinary new lifetime warranty.* The Qualimetric standard is maintained without compromise through every step of BASF design, production, inspection, and testing...reflecting an unwavering BASF commitment to media fidelity and durability.

Our FlexyDisk jacket incorporates a unique two-piece liner that not only traps damaging debris away from the media surface, but also ensures precise media-to-head alignment. The result—certified 100% error-free performance, backed by BASF's exclusive lifetime warranty.*

For information security, tomorrow and beyond, look for the distinctive BASF package with the Qualimetric seal. Call 800-343-4600 for the name of your nearest supplier.

ENTER TOMORROW ON BASF TODAY



BASF

*Contact BASF for warranty details. © 1982, BASF Systems Corporation, Bedford, MA

gramming. Unlimited vocabularies in subsets of up to eighty words or phrases are stored and recognized without using any memory or processing power. \$800.

□ **Novation** (18664 Oxnard Street, Tarzana, CA 91356; 213-996-5060) miniaturizes the modem with the introduction of the J-Cat. This 300 baud, direct connect, autodial/answer modem is about a fifth the size of conventional modems. Light-emitting diodes show you its current status, and an audio beep tells you when you've reached a busy signal. \$149. Novation also unveils two smart modems. Both offer a built-in Touch-Tone or rotary dialer, auto answer, direct connect, and analog and digital loopback testing. The 103 Smart-Cat operates at 300 baud and is \$249. The 103/212 Smart-Cat operates at 1200 baud and is \$595.

□ **The Investors Interface** from **MarketWare** (Box 34647, Richmond, VA 23234; 804-276-8577) captures Dow Jones stock data and converts it for use by VisiCorp products, *Apple Plot*, *PFS: Graph*, *Apple Business Graphics*, and other software. With the interface, your Apple can log on, record data, and log off, all by itself. This one requires a Hayes Micro-modem II and two disk drives. \$125.

□ **The Computer Coloring Book** from **Prentice-Hall** (Englewood Cliffs, NJ 07632; 201-592-2348) uses twenty-five full-page illustrations to introduce kids to computing. The book integrates coloring with fifty definitions that explain the meanings of the pictures and terms. \$6.95.

□ **Verbatim** (323 Soquel Way, Sunnyvale, CA 94086; 408-245-4400) will market specially formulated, high density disks for the new Apple UniFile and DuoFile disk drives (Marketalk News, January 1983). The new disks have a life expectancy of 70 million revolutions and a warranty of seventeen years. Storage potential is greater than before to accommodate the drive capacity of the new Apple drives.

□ **The 3M Company** (Box 33600, Saint Paul, MN 55133; 612-733-9562) offers its media to be used with Apple's UniFile and DuoFile disk drives. Fileware are Scotch brand disks made for use with the new Apple drives.

Disk capacity is approximately 871K formatted, offering an increase in data transfer rates over disks used in current disk drives.

□ And now, from **Advanced Logic Systems** (1195 East Arques Avenue, Sunnyvale, CA 94086; 408-730-0306), come three video interface cards. **Smarterm II** gives you automatic keystroke selection of an eighty-column screen or a forty-column screen. With it, you get to select special characters, custom graphics, replaceable character sets for foreign languages, and a twenty-fifth line for status update for use by the *WordStar* word processor. \$179. The **Dirt Cheap Video** interface card connects you to a television set with an RF modulator or monitor and provides a sixty-four column display. **Dirt Cheap** also permits the same character selection options as the **Smarterm II**. \$89. The **Color II** interface card connects your Apple to high or medium resolution RGB color monitors. It converts the Apple composite video to red, green, and blue and provides the highest quality color hues available on RGB monitors. \$179. **Advanced Logic** also releases the first plug-in CP/M interface card for the Apple. In addition to letting you run CP/M software on your computer, the board provides 64K extra memory. \$399.

□ The **B.T. Space Saver Printer Stand** from **B.T. Enterprises** (10B Carrough Road, Bohemia, NY 11716; 516-567-8155) allows continuous form paper to be stored under the printer, so you can stack completed forms behind the printer. This stand comes in several configurations to accommodate both small 80-column printers and hefty 132-column printers. If you want, all sizes are available with an optional shelf for storage of a second kind of data form. The large stand can be purchased with a center slot, allowing paper to feed up through the stand. Prices begin at \$29.95.

□ **AGT Computer Products** (20675 South Western Avenue, Torrance, CA 90501; 213-533-1244, 800-421-5838) now has a line of dual-plastic Olivetti-compatible printwheels. Fifteen typesets are currently available. \$14.50.

INTRODUCING



Touch Top II - the final word in cursor control systems is here. A professional quality joystick combined with large one inch buttons positioned where they belong, on top.

Precision metal construction and painting to match the Apple II. The Touch Top II snaps directly into your Apple and comes equipped with cooling vent slots. No more mess and tangled cables.

Touch Top II makes business easier and scoring higher. Remember the name . . . Touch Top II, it "sits on top".

DISTRIBUTED BY

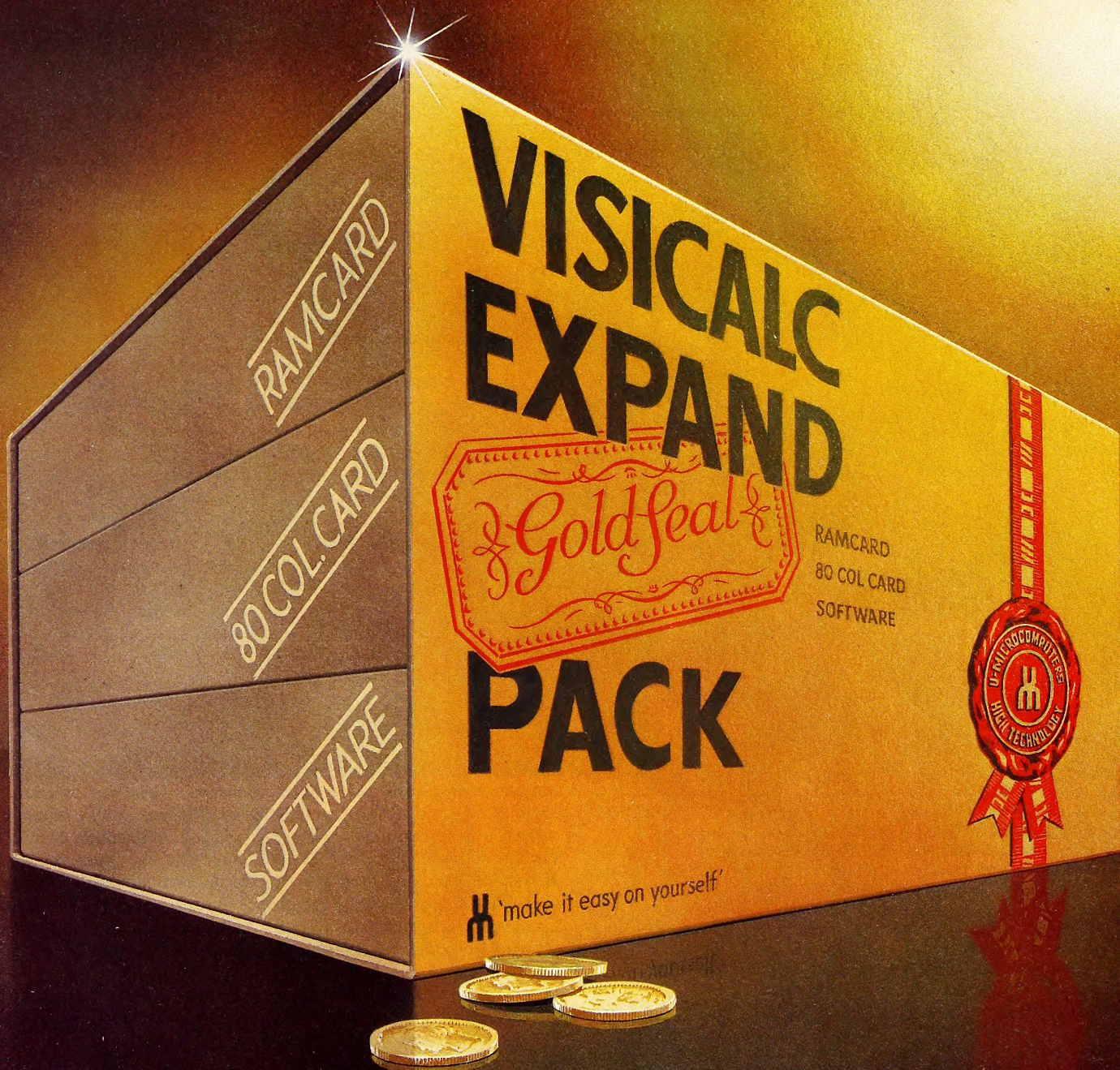
MicroStand Inc. TM
Standard in Microcomputing Products

2000 S. Holladay, Seaside, OR 97138
1 (800) 547-2107 in OR 1 (503) 738-9601

SUGGESTED
RETAIL \$99.95

Call toll free for the name of your nearest
authorized Microstand dealer/or order direct





NOW: you can make the most of your Apple II and Visicalc.

That's right, 80 column display with bigger memory for Visicalc, now.

The Visicalc Expand Gold Pack includes either 32K, 64K, or 128K RAM cards, an 80 column display card (which is fully compatible with other Apple software including Wordstar, Applewriter 2, PASCAL, CP/M) and our own Versa Visicalc Expand software.

All our own products!!

VEGP 32. Comprising 32K RAM card, 80 column card and Versa Visicalc software. **\$448**

VEGP 64. Comprising 64K RAM card, 80 column card and Versa Visicalc software. **\$576**

VEGP 128. Comprising 128K RAM card, 80 column card and Versa Visicalc software. **\$720**

*Order Visa or UPS COD
(\$3.00 per card delivery & COD)
Conn. residents add 7.5% sales tax.*



U-MICROCOMPUTERS

U-Microcomputers Ltd, Winstanley Industrial Estate,
Long Lane, Warrington, Cheshire, WA2 8PR, England.
Tel. 0925 54117 Telex 629279 UMICRO G.

U-Microcomputers Inc, 300 Broad Street, Stamford,
Connecticut 06092, USA. Tel. 203 359 4236 &
Toll Free (800) 234 2475 Telex 965999 O&S STD.

Apple, trademark Apple Computer Inc.
Visicalc, trademark Visicorp Inc.
CP/M, trademark Digital Research Inc.

**TIRED OF ALL THE
"EXCEPT FOR..."S?**

**WITH THE NEW PRINTOGRAPHER
GRAPHICS PRINTING SYSTEM,
WE'VE GOT YOU COVERED!**

PRINTOGRAPHER™



PRICE: \$49.95

(California Residents add 6% sales tax.)

The **PRINTOGRAPHER** is designed to fill all of your graphic printing needs, without having to worry about running into the problem of it almost working, "except on your printer", or "except for the lack of that particular feature". Whether you have a doisy wheel or dot matrix printer, the standard version of **PRINTOGRAPHER** works on any printer and interface combination with graphics capabilities. In many cases, this includes printers you may not even have thought could print graphics.

Just a FEW of the possible printers include: EPSON, PAPER TIGER, ANADEX, NEC, DIABLO, QUME, MPI, SILENTYPE, OKIDATA, MALIBU; interface cords include: APPLE, SSM, CCS, MTN COMP, CP5, MPI, GRAPPLER, TYMAC, PROMETHEUS and more!

In addition to versatile print options (easy cropping, variable magnifications, normal/reverse inking, vertical/horizontal format, etc.)

PRINTOGRAPHER offers such unique features as the ability to print pictures directly from disk (without loading a file), spooling via our **DOUBLETIME PRINTER** package, or sending pictures over a phone line using **ASCII EXPRESS**. You can even put graphics in your text documents with our text editor software, **THE CORRESPONDENT**. As if that wasn't enough, we've made it easy to put the **PRINTOGRAPHER** routines right in your own programs to do Hi-Res printing immediately during their operation, without having to save screen images to disk!

We also know you see a lot of advertising these days for a truly overwhelming volume of software, all claiming to be the best, so we make this simple guarantee:

IF YOU CAN FIND A BETTER PACKAGE THAN (OR ARE AT ALL UNSATISFIED WITH) THE PRINTOGRAPHER WITHIN 30 DAYS OF PURCHASE, SIMPLY RETURN THE PACKAGE FOR A COMPLETE REFUND, NO QUESTIONS ASKED!

For more information, see your local dealer, or write **SOUTHWESTERN DATA SYSTEMS** for a free catalog. If your dealer is out of stock, we can ship **PRINTOGRAPHER** to him within 24 hours of a call to our offices.

REMEMBER: WITH PRINTOGRAPHER, YOU'RE PICTURE PERFECT!

southwestern data systems™

10761-E Woodside Avenue • Santee, California 92071
Telephone: 714/562-3670

□ The **Securities Industry Association** (120 Broadway, New York, NY 10271; 212-425-2700) is sponsoring the 1983 SIA Microcomputer Conference and Exhibit which will be held February 16 through 18 at the New York Statler Hotel. The conference is devoted exclusively to the use and future of the microcomputer within the securities industry. Workshops and meetings for exhibitors will be held. Registration: \$150.

□ **Davong's** (610 Palomar Avenue, Sunnyvale, CA 94086; 408-773-8370) USXXM Hard Disk Subsystem comes in both master and slave configurations to give you expansion of up to sixty megabytes of on-line storage. Available in five, ten, and fifteen-megabyte versions, the master subsystem acts as a controller for an additional slave drive or other backup device. Apple users can transfer data between their terminals and an IBM pc. Masters, \$1,995 to \$2,995; slaves, \$1,495 to \$2,495.

□ **Custom Software Design** (831 Maplewood Avenue, Anderson, IN 46012) announces *Stock*, the latest in their Investment Analysis Series. *Stock* is designed to help the personal investor to analyze and compare corporate stocks using the computer. The program gives you comprehensive, statistical analysis of a single stock, storage and retrieval of up to 150 stocks per disk, side-by-side comparison of stocks, and printing of stock analyses. \$95.

□ *What's Where in the Apple* provides a framework for understanding both the overall organization and structure of the Apple system and programming techniques that use that knowledge. This book from **Micro Ink** (34 Chelmsford Street, Box 6502, Chelmsford, MA 01824; 617-256-5515) contains lists of memory locations of peeks, pokes, and calls. At last, an atlas of the Apple. 256 pages. \$24.95. *The Guide* is a version of *What's Where* with text only (without listings). 158 pages. \$9.95. Finally, *Micro on the Apple*, volume 3, is a collection of nineteen articles from *Micro*, and it comes with more than forty programs on disk. 224 pages. \$24.95.

□ **Queue** (5 Chapel Hill Drive, Fairfield, CT 06423; 203-335-0908) puts out a monthly journal called *Microcomputers in Education*. It carries reviews of educational software, articles and analyses, and it offers subscribers a 10 percent discount and thirty-day return privileges on all educational software *Queue* sells. \$33 per year. Also, the *Queue* catalog 12 lists several thousand programs from more than 140 publishers. It's a complete catalog of game, education, business, and utility software. Catalog 8 lists available software for kindergarten through ninth grade students, and catalog 9 is for high school and college scholars. All catalogs are free.

□ For programmers, **D & M M Software** (Box 1031, Palatine, IL 60078) offers *Development and Debugging Aids*. One utility in the package lists all active variables and matrices in an Applesoft program, along with their current values. A second utility is a keyboard enhancer that gives you automatic generation of strings by using the control key. One control character will perform several operations that are normally typed in one at a time. \$19.95.

□ **Mike Caro's Video Poker** from **Arisoft** (Box 9184, Whittier, CA 90608; 213-698-9931) comes in two parts. The first is a simulation of the video poker slot machines found in Las Vegas, that nutty, nutty town; the second part gives you the option of playing against another person, against the computer, or of having the computer play against a phantom computer player. Both games include tutorials that help you learn strategies as you watch two phantom players play. It also includes a strategy designed by professional gamblers. \$39.95.

□ A fantastic voyage is in store for players of *Microbe: The Anatomical Adventure* from **Synergistic Software** (830 North Riverside, Suite 201, Renton, WA 98055; 206-226-3216). It's a game that combines adventure, arcade action, and medical science all in one package. Your miniature submarine is injected into the human body; your mission is to find and rid the body of disease and repair damage to the brain. Three different levels of play make it a challenging game for beginners, teachers and parents, students, premeds, and medical students. You decide what treatment to give and what drugs to prescribe at what immunity levels. \$44.95. Synergistic's *Bolo* is a strategic arcade game that offers complex and challenging play because of its high speed and varied intelligence levels of computer-controlled opponents. Wind your tank through a maze that's 132 times the size of your screen, fighting off enemy tankers whose movements and fire power vary. \$34.95. ■



IF MetaCard DOESN'T IMPROVE YOUR WORKING CONDITIONS WE'LL GIVE YOU YOUR MONEY BACK.

It's almost three in the morning. You knew just one more line of code and your program would be finished. That was seven hours ago. It's hard work developing good software. Writing it on the Apple II is no exception. Although we can't promise to get you to bed by eleven o'clock, we can make your job a lot easier.

When we developed MetaCard, a co-processor system for the Apple II, we designed in 128K bytes of on-board memory with parity. Enough memory to run the most powerful development tools available. We included memory expansion capabilities beyond 128K.

And we made sure it could run all three operating systems for the IBM PC. MetaCard does more than make your job easier, it opens up new development areas. If you want to create or run more powerful applications software for the Apple, or for the IBM PC or other 8086/88-based systems, you should have a MetaCard in your Apple. MetaCard supports the most popular development languages available for MS-DOS, CP/M-86 and UCSD p-System Version IV. Languages like Pascal, C, COBOL,



FORTRAN, BASIC and almost all others operate at peak performance. MetaCard enables you to continue to use most of the popular peripherals for your Apple II, plus all of your existing software. And with many best selling applications for the IBM PC available soon, you can use your Apple in new and developing areas.

MetaCard uses the Intel 8088 processor and operates at a full 5 Mhz. And MetaCard's real-time clock, external power supply, parity checking RAM, and power-up ROM diagnostics give you the features and reliability you demand.

Satisfaction Guaranteed

We know you'll still work through the night.

But if MetaCard doesn't improve your working conditions, return it within 30 days, and we'll send your money back. No questions asked.

MetaCard, complete with documentation, MS-DOS and UCSD p-System (CP/M-86 optional) and power supply, is available in both 64 and 128K configurations, priced at \$980 and \$1,150 respectively. The MetaCard System Operating Manual is available for only \$25.

For more information write us today,
Metamorphic Systems, Inc., 8950 Villa La Jolla Drive, Suite 1200, La Jolla, CA 92037.

Or call us today to order yours at

800/228-8088

In California call 619/457-3870.

MetaCard is a trademark of Metamorphic Systems, Inc., Apple — Apple Computer Inc., Intel 8088 — Intel Corporation, CP/M-86 — Digital Research Corporation, MS-DOS — Microsoft, UCSD p-System — University of California, IBM PC — IBM.

MetaCard

Announcing The best 6502 Assembler in the World

ORCA/MTM

Now. The kind of high-level support you'd only expect to find on a main frame.

ORCA/M (*Hayden's Object Relocatable Code Assembler for Micros*) lets you develop sophisticated applications with the speed and ease of a high-level language, yet retain the control and efficiency that only assembly language can give.

Here's what ORCA/M gives you:

The Assembler

Macro language features:

- Conditional assembly of source and macro files
- Separate source and macro files
- Nestable macros
- Parameter mid-string and string search functions
- Symbolic parameter assignment
- Numeric, string, and boolean type parameters
- Parameter subscripting
- Global communication between macros
- Macro expansion loop control
- Count, length and type parameter-attribute functions

Extensive Macro Libraries

Memory Constant Declarations:

- Integer
- Character
- Four-byte Integer
- Hexadecimal
- Floating Point

Relocatable object module generation

Fast assembly directly to disk

Program segmentation:

- Selectively assemble individual subroutines
- Global and local scope of symbols

The Linker

Produce executable binary files from relocatable object modules

Link routines from library files

Link subroutine re-assemblies

Define a new origin for previously assembled code

Invoke at assembly time or by command

Subroutine libraries:

- Floating point and double-precision routines
- Transcendental functions
- Hi- and lo-res graphics
- Multiple-precision integer math
- Input and output

The Editor

Co-resident screen editor:

- Global search and replace
- Block move
- Entry of non-keyboard characters

Supports lower case adapters and shift-key modification

80-column: horizontal scrolling with 40-column displays

The System

Monitor: transparent control of system from one command level

Extended Disk Commands:

- File copy
- File undelete
- Catalog sort
- Wildcard filenames

Disk ZAP: Built-in disk sector editor

Optimized DOS 3.3 compatible operating system

Operating system interface:

- Supports a variety of configurations
- User-modifiable to allow linkage of custom drivers for peripherals

64k RAM supported, 48k required

This unique array of features and functions speaks for itself: the power of **ORCA** is unsurpassed.

All features are documented clearly and extensively. Source listings for the subroutine and macro libraries, as well as the operating system, are included.

ORCA. If you're serious about developing 6502 software, it's the one to have.

Available from your local dealer, or call:
800-343-1218

(In MA call 617-937-0200)
ORCA/M: 21609
Apple II disk, 48k, DOS 3.3
Two drives and 64k recommended

**Introductory Price:
\$99.95**

CONTEST WINNERS

from page 6

Sandwich Generator was smiling on Heimowitz that fateful day when all the correct entries were examined. Besides, Heimowitz's turkey sandwiches tasted the best, according to the contest staff. For his adroitness with the turkey net, Heimowitz will receive *Jigsaw* and *Microbarmate* from his local Computerland.

The contest staff appreciates all the letters everyone sent in with their entries. Believe it or not, we do look at each entry. But you have to remember that when you send us an out-of-the-ordinary entry, if you're not saluted for outstanding performance, then you run the risk of being embarrassed in front of fellow readers.

Softalk Salutes. Throwing herself on the mercy of the contest staff was Susan Jordan (Fort Valley, GA), who pleaded, "I have served turkey sandwiches three times a day to get in the mood for the contest. I have gained forty-seven pounds from eating all those sandwiches. My husband developed an allergy to turkey and had to move. My daughter asked to be placed up for adoption, preferably in a country where turkeys are considered sacred and may not be killed or even counted."

Boy, if there's one thing we can't stand, it's a whiner. But Jordan did not stop there.

"If I win, I want everything, including: software, hardware, peripherals, a color monitor, modem, books, magazines, flowchart templates, and a job in the computer field."

Jennifer Myers (New York, NY) and Michael Friedlander (Los Angeles, CA) aren't too good at turkey hunting, but they sure are good with the scissors. Though they missed catching all the birds, both Myers and Friedlander sent in their entries accompanied by all the turkeys they counted, clipped out of the magazine. Myers locked up hers in a crayon-decorated turkey pen for easy handling. Friedlander carelessly threw his in, not even thinking about the consequences of his thoughtless actions. When we opened the envelope, all the turkeys fell to the floor, killing them instantly. They were delicious.

Loren Neill (Woodland, TX) just sent us his name, address, dealer, and choice of prizes, but he forgot to tell us how many turkeys he counted. W. Yelke (LaGrange, IL) sent us a coupon and left the turkey count area empty. But of all the absent-minded contestants, Bill Cheng (Rivervale, NJ) stands out the most. He sent us an empty envelope.

Family Feud. Not only could the Stark family (Gaithersburg, MD) not spell "Softalk" correctly, they couldn't agree on the number of turkeys either.

"Dear Sirs: After much debate with my wife and son, here's my entry into the Softalk contest: 348 turkeys. Greg Stark." Sorry, Greg.

"Dear Sirs: After much debate with my husband, here's my entry into the Softalk contest: 345 turkeys. Anita Stark." Nope.

"Dear Sirs: I spent the Thanksgiving weekend watching my parents trying to count hi-res turkeys in your contest. After they both came up with different numbers, I decided to count them myself to see who is really right. My entry is: 349 turkeys. Chris Stark." Good going, Chris. Send your parents to their room without supper.

While the Starks scream it out, take a look at Michael Schindler's (Fitchburg, MA) entry. He sent it via Express Mail. Never mind that his turkey count (334) was considerably short. Schindler spent \$9.35 on postage to get his entry here on time. That's dedication.

You Want What for a Prize? Then there's the subject of what people want if they win. The prize was the usual \$100 in goodies made by our advertisers. Some contestants weren't so easily satisfied. Apparently, our overwhelming generosity was not enough. More people than you'd want us to list requested that we send them some real turkeys as the prize. Not Gary Kielar (Clinton, NY). He wanted us to send him someone to get all the turkeys out of his office.

"If I should win," wrote Mark "No Return Address" Chan, "I hope you can award me with \$100 cash instead of \$100 worth of goods. This is because I don't have and cannot afford a computer." Can't do that, Mark, but we will give you \$1,400 worth of advice on which computer you should buy. Get the hint?

Michael Varga (San Francisco, CA) said he would make out a check for \$2,000 in *Softalk's* name to the Rhode Island House for the Nasally Deficient. Though \$2,000 is nothing to sneeze at, we don't take bribes. Well, most of us don't.

Finally, Matt Dixon (Bloomington, IN) and Chris Nenzel (Reno, NV) actually owe us prizes. Between the two of them, they requested *Apple Panic*, *Crossfire*, *Frogger*, and a TG Track Ball—all for the Atari computer.

Is He, or Isn't He? The votes are in; the peoples' voices have been heard. "No way!" was the cry. No way did the readers believe that the clumsy-looking beginner on the Beginners' Corner page is Bill Budge. Well, we can't fool you. You're all correct. Bill Budge is not a beginner. But that's him in the picture, all right!

Steve Rosenberg (Moraga, CA) can't be fooled. Rosenberg was yanked out at random from all the entries that correctly identified Budge as the beginning bungler. For his ability to recognize pinball wizards at a glance, Rosenberg will receive a copy of BudgeCo's *Pinball Construction Set*.

We understand that the thought of Budge being a beginner is a ridiculous one. That's why we understand why the piles of postcards that poured in were two-to-one on the "No way" side. We sympathize with you all.

But what we won't tolerate is cheating. Watch out for Scott Nelson (Minneapolis, MN), John Estell (Maumee, OH), Marc Ries (Whittier, CA), and Donna DeBonis (a schoolteacher, yet!) (Farrell, PA) in the next election. Each submitted both "No way" and "That's him all right" votes.

Next month: Oracle results start anew. ■

STATISTICS

PURE AND SIMPLE



Human Systems Dynamics programs offer you flexibility, accuracy, and ease of use. You can purchase from the HSD statistics specialists with complete confidence. Any program that doesn't suit your needs can be returned within 10 days for full refund.

NEW

STATS PLUS \$200.00

Complete General Statistics Pockage
Research Data Base Management
Design and Restructure Your Files
Caunt, Search, Sort, Review/Edit
Add, Delete, Merge Files
Compute Data Fields, Create Subfiles
Interface with other HSD programs
Produce Hi Res bargraphs, plots
1-5 way Crasstabulation
Descriptive Statistics for all Fields
Chi-Square, Fisher Exact, Signed Ranks
Mann-Whitney, Kruskal-Wallis, Rank Sum
Friedman Anova by Ranks
10 Data Transformations
Frequency Distribution
Correlation Matrix, 2 way Anava
r, Rha, Tau, Partial Correlation
3 Variable Regression, 3 t-Tests

ANOVA II \$150.00

Complete Analysis of Variance Package
Analysis of Covariance, Randomized Designs
Repeated measures Designs, Split Plot Designs
1 to 5 Factors, 2 to 12 Levels Per Factor
Equal N or Unequal N, Anova Table
Descriptive Statistics, Marginal Means
Cell Sums of Squares, Data File Creation
Data Review/Edit, Data Transformations
File Combinotians, All Interactions Tested
High Resolution Mean Plots, Bargraphs

HSD REGRESS \$99.95

Complete Multiple Regression Analysis
Up to 25 Variables, 300 Cases/Variable
Correlation Matrices, Descriptive Statistics
Predicted & Residual Scores, File Creation
Regression on Any Subset of Variables
Regression on Any Order of Variables
Hi-Res Scatterplot & Residual Plot
Keyboard or Disk Data Input
Case x Case Variable x Variable Input

Apple II, 48K 1 or 2 Disk Drives
3.3. DOS, ROM Applesoft

Call (213) 993-8536 to Order

or Write:

HUMAN SYSTEMS DYNAMICS
9249 Reseda Blvd., Suite 107
Northridge, CA 91324

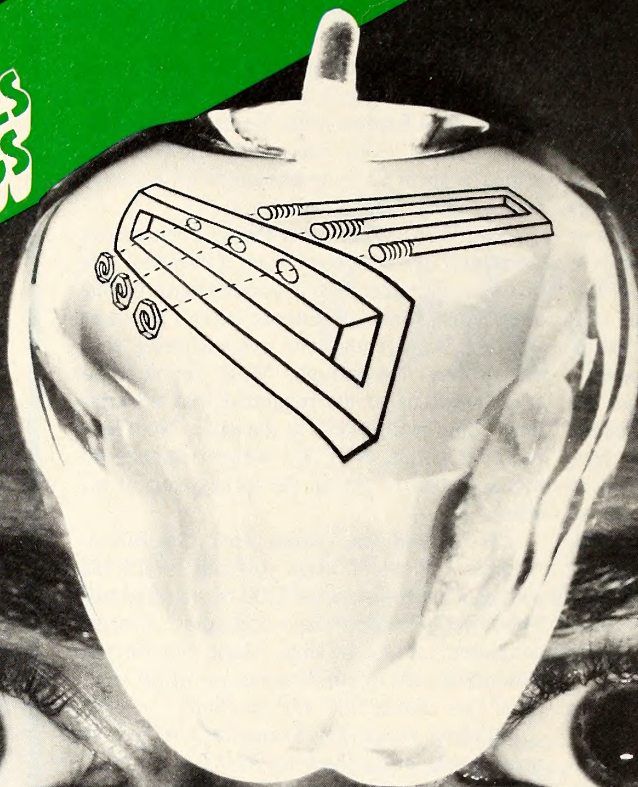
VISA

master charge

IMAGINE IT...

NOW WITH
**DUAL HI-RES
GRAPHICS**

NEW



CAPTURE IT.

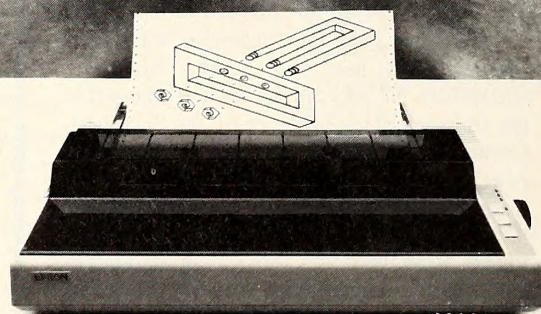
Completely Redesigned. Now, the Grappler +.

The original Grappler was the first graphics interface to give you hi-res screen dumps from your keyboard. The new Grappler + with *Dual Hi-Res Graphics* adds flexibility with a side-by-side graphics printout of page 1 and page 2.

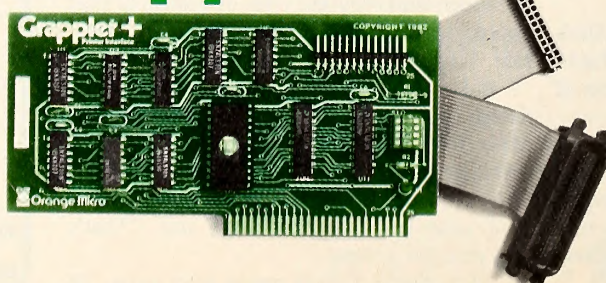
The Grappler + can now be used with the Apple® Dot Matrix, the Okidata 84, and is Apple III compatible*. In addition, the IDS Grappler + is currently available with color capability, including color graphics screen dumps.

The imitations are many, so insist on the #1 Apple graphics interface on the market. Insist on the Grappler +. Available now at most Apple dealers.

*Requires additional software driver.
**Requires graphics upgrade.



Grappler +



The Grappler + Features:

- Dual Hi-Res Graphics • Printer Selector Dip Switch • Apple III Compatible* • Graphics Screen Dump • Inverse Graphics • Emphasized Graphics • Double Size Picture • 90° Rotation • Center Graphics • Chart Recorder Mode • Block Graphics • Bell Control • Skip-over-perf • Left and Right Margins • Variable Line Length • Text Screen Dumps.

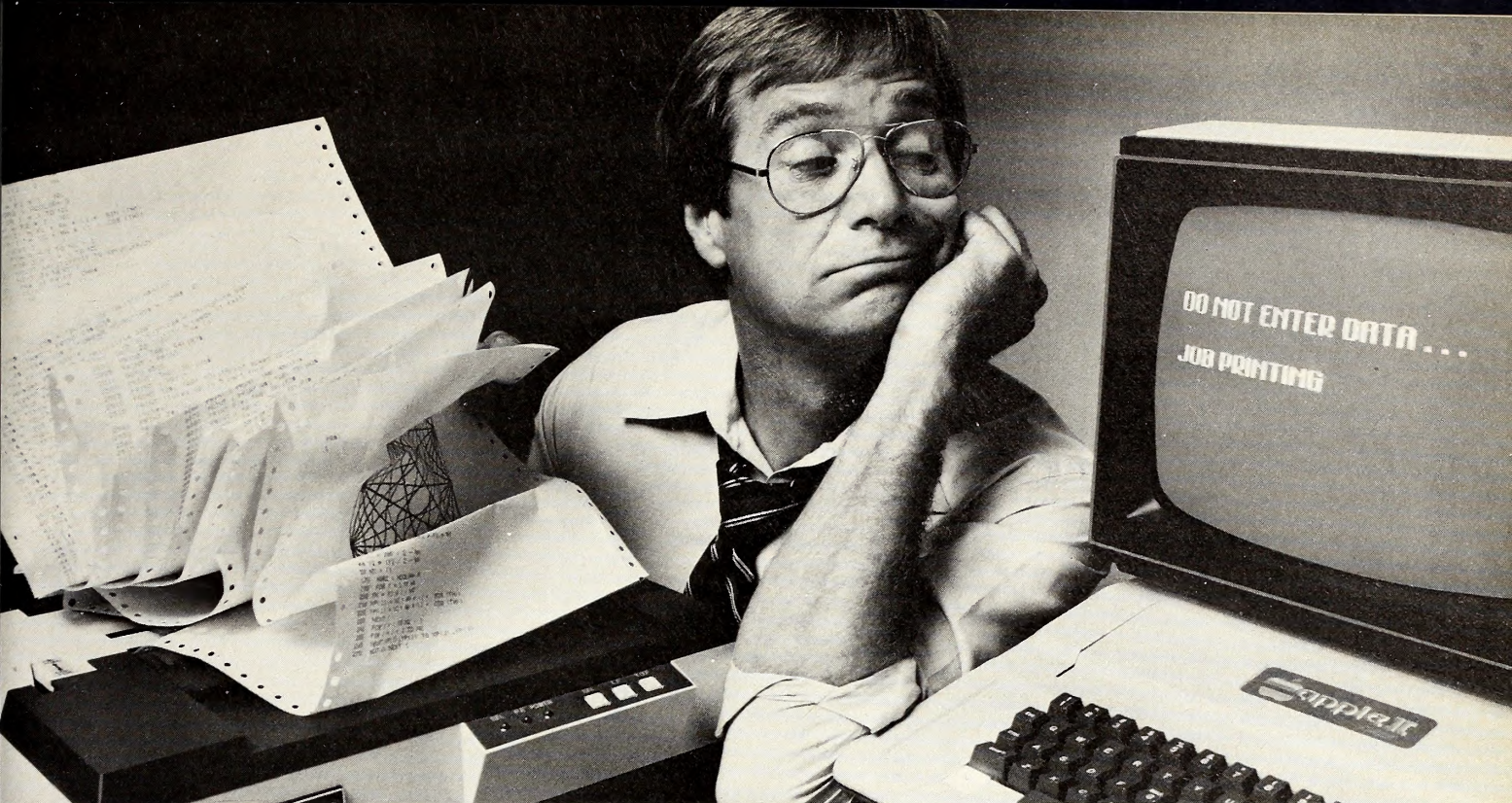
The Grappler + also works with Pascal and CPM.

The Grappler + interfaces with the following printers:

- Anadex • Apple Dot Matrix • Centronics 122 • C. Itoh ProWriter • Epson MX-70, MX-80**, MX-80F/T**, MX-100 • IDS 460, 560, Prism 80 and 132, Microprism • NEC 8023 • Okidata 82A**, 83A**, 84.

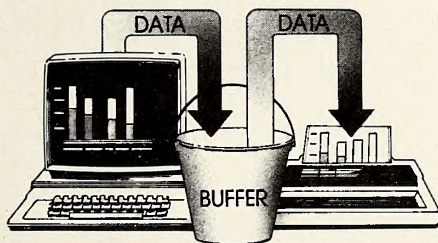
Orange Micro
Inc.

1400 N. Lakeview, Anaheim, CA 92807
U.S.A. (714) 779-2772 Telex: 183511 CSMA
Foreign Dealer Inquiries Welcome



If your printer uses your Apple[®] more than you do, you need The Bufferboard.[™]

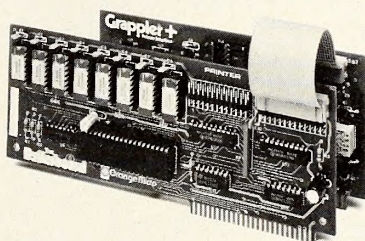
If your Apple is locked into the "PRINT" mode so much that you've taken up solitaire to kill the boredom, you need a buffer. And if your computer is the Apple II or III, the only buffer for you is The Bufferboard. Expandable to 64K of storage, The Bufferboard stores an instantaneous bucketful of print data from your computer. Then it feeds the data to your printer at its own printing rate. Your Apple is set free from driving your printer and is ready for more data from you.



**Take your existing interface—
and buffer it!**

Only The Bufferboard has a simple Interface-Docking System. No bulky boxes

or expensive power supplies are needed because The Bufferboard fits right into your Apple—and docks onto your existing printer interface. The result is convenient



and economical buffering of most popular printer interfaces, including the Grappler +[™] interface, Epson interface, and Apple printer interface. Thirty seconds and a single hook-up are all you need to end the printer waiting game forever.

**Up to 20 letter-size pages
stored at a time.**

The Bufferboard comes standard with 16K, and is expandable to 32K or 64K of buffering capacity with the addition of

memory chips. This "bucket" will hold up to 20 pages of a print job, allowing you freedom to use your Apple.

**The Bufferboard—designed
exclusively for the Apple Computer.**

Specifications:

- Versions for Grappler + interface, Epson interface, Apple interface, and other popular printer interfaces • 16K buffer standard • Upgradeable to 32K or 64K • Automatic memory configuration • Automatic self test • Includes interface docking cable.

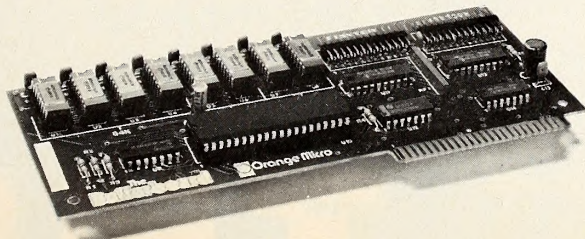
The Bufferboard is made by Orange Micro, Inc.; the same people who brought you the popular Grappler + printer interface. Both the Grappler + and The Bufferboard are now available at your local Apple dealer.

Apple is a registered trademark of Apple, Inc. Epson is a registered trademark of Epson America, Inc.



**Orange Micro
inc.**

1400 N. Lakeview, Anaheim, CA 92807
U.S.A. (714) 779-2772
TELEX: TX 183511 CSMA



**The
Bufferboard[™]
For Apples and Printers**



With the speed of light and a hearty “Heigh-ho, Lisa,” Apple Computer roared back to the forefront of microcomputer technology at the annual meeting of their stockholders January 19 when they unveiled Lisa, their answer to corporate America’s desktop computer needs. With equal fanfare, they brought forth the Apple IIe personal computer.

It was the Silicon Gulch equivalent of Hollywood announcing that Bo Derek and George Burns would costar in a movie. We all know where attention will be riveted. And we all know who’ll get upstaged.

Lisa is definitely the computer of men’s dreams. It’s got gizmos in places where other computers don’t even have places. If *Sports Illustrated* followed the lead of its sister publication, *Time*, it would feature machines in its infamous bathing suit issue. Lisa would make the cover and the centerfold.

Lisa’s standard model has more luxurious appointments than the competition’s deluxe edition. In a 100-yard dash, Lisa has a 90-yard head start.

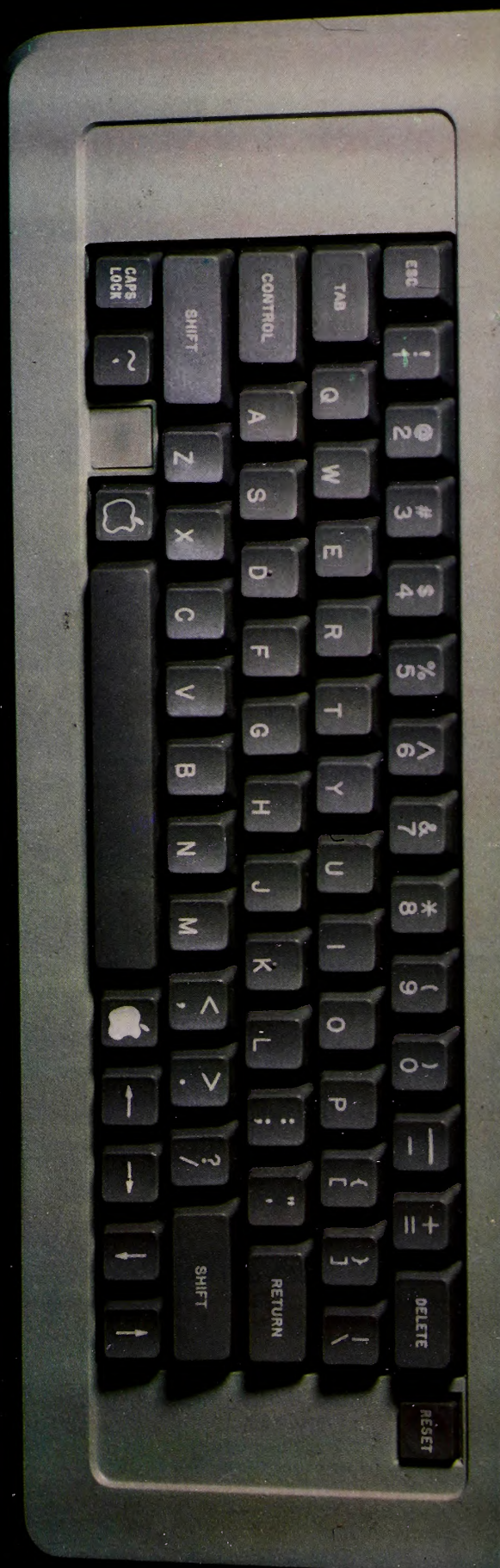
But it’s the Apple II that’s captured men’s hearts. Lisa has a mouse, the IIe is just mousy. Lisa is the high school cheerleader, IIe is the girl next door.

Most important, however, is that Lisa is still in beta testing. The IIe is as available as your local computer store. Lisa may have high density drives, but IIe has high density sales.

Lisa is neat, nifty, and ninety-nine ninety-five. That’s in coin of the realm without decimal points. Few folks will be trotting into their local computeria, MasterCard in hand, to buy one for Junior.

IIe retails at \$1,395 for a standard 64K RAM machine. Like George Burns, the IIe has thinning hair, aching joints, and makes us laugh in delight as it does one improbable task after another that senior citizens aren’t supposed to be able to do. Lots of Juniors will be benefiting from the IIe.

Lisa may have the glamor (see “Lisa’s Debut”), but Apple clearly wasn’t blinded for a second by the beauty of the newcomer. Their update to the Apple II is a thoughtful amalgam of hardware changes that honors the software and peripherals industries that have made Apple II the most used and the most useful microcomputer.



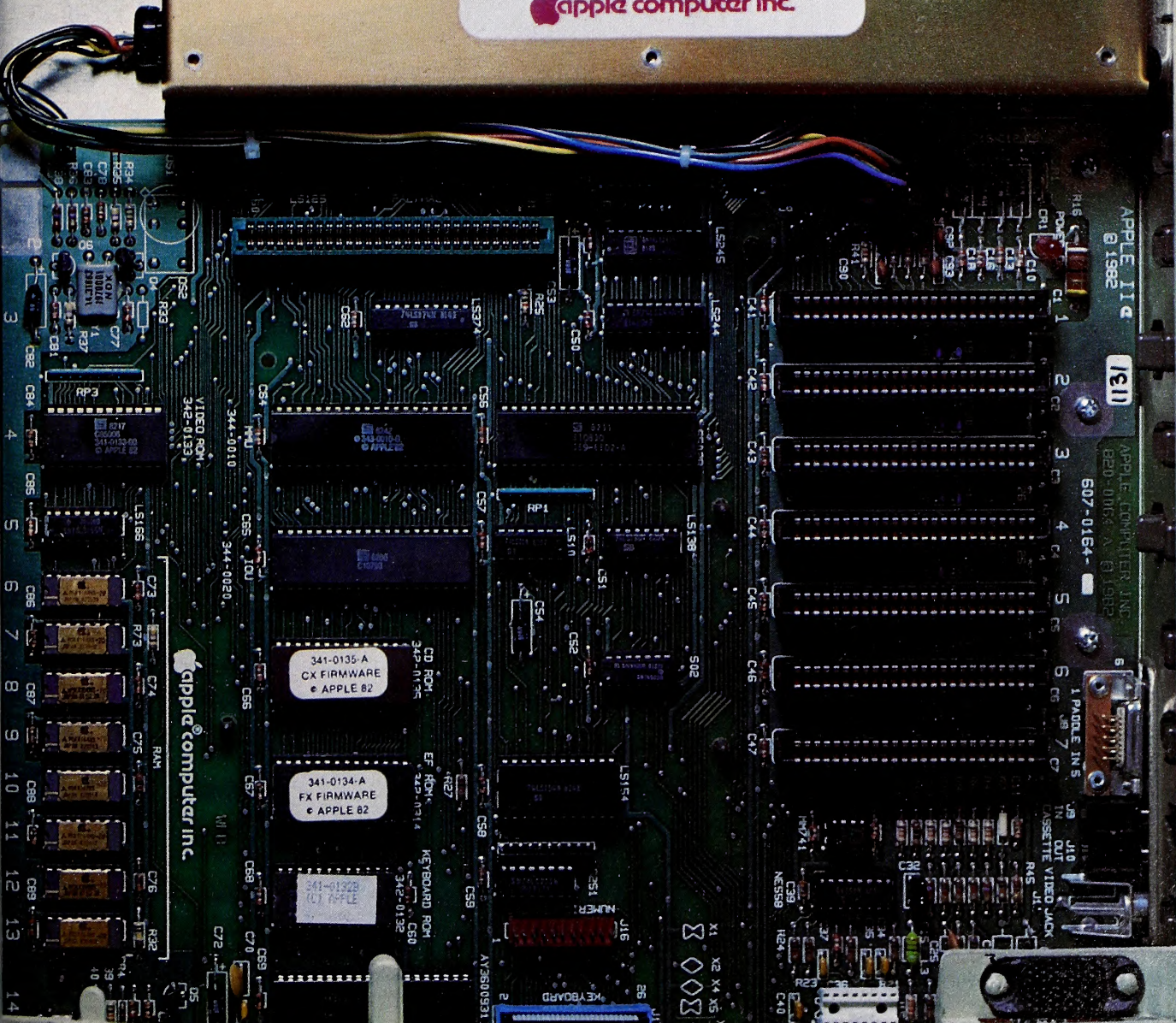
THE

USER-SERVICEABLE AND THERE ARE DANGEROUS
HIGH VOLTAGES INSIDE THE POWER SUPPLY CASE
IN THE EVENT OF DIFFICULTY, NOTIFY APPLE
COMPUTER, INC. OR YOUR DEALER FOR PROMPT
SERVICE

POWER SUPPLY 605-5703 SERIAL #059383



apple computer inc.



DIFFERENCE

SPECIAL OFFER!
Get \$75 to \$300 off
additional Microsoft software
when you buy the SoftCard System.



Introduce your Apple® to thousands of new programs with the new Microsoft SoftCard.™

A more powerful Apple. When you add the new Microsoft SoftCard system to your Apple II or II Plus, you also add the ability to run thousands of CP/M-80® based programs. Languages. Utilities. Applications programs that range from word processing and data base management to analysis and forecasting tools. Thousands of software tools for business, professions and the home. Tools that can turn your Apple into a far more productive machine. And, the new SoftCard system is enhanced, allowing you to run 60K programs. If you already have a SoftCard system, ask your dealer about Microsoft's inexpensive upgrade kit.

Two computers in one. With the SoftCard system, your Apple becomes two computers. One that runs Apple software, another that runs CP/M-80. Which means you'll double the utility of your computer.

A complete solution. The SoftCard system includes everything. The easy-to-install SoftCard circuit board. The CP/M-80 operating system. Microsoft BASIC plus GBASIC for graphics applications. And, the utilities you need to manage CP/M-80 files.

Why Microsoft? Microsoft was the first personal computer software manufacturer. The very first. Today, Microsoft software is running on well over a million computers worldwide. There's a reason. Microsoft has earned a reputation for better

software. Products that work. Products that are constantly being enhanced. And when the enhanced versions are ready, we make the enhancements available to our customers. Like the 60K enhancement for the SoftCard system. That kind of product support is just one of the ways we earned our reputation.

Ask your dealer. Ask about the superior applications programs the SoftCard system makes available to your Apple. High quality programs for almost every area of home, business, and professional use. Then, ask for a demonstration of the complete Microsoft SoftCard package... and any of those thousands of new programs you can introduce to your Apple.



BETTER TOOLS FOR MICROCOMPUTERS

MICROSOFT.™

MICROSOFT CORPORATION
10700 NORTHUP WAY
BELLEVUE, WASHINGTON 98004

Microsoft is a registered trademark of Microsoft Corporation
SoftCard is a trademark of Microsoft Corporation
Apple is a registered trademark of Apple Computer, Inc.
CP/M-80 is a registered trademark of Digital Research, Inc.

THE DIFFERENCE

That homage to their past has been a salient point in each change Apple has made to their II series, and the installed base of Apple owners can take great comfort in knowing that the company has remained steadfast in their dedication to their old constituency. Even the major revisions executed to accomplish the IIe do not disenfranchise owners of older systems, nor do they invalidate most already existing software and peripherals.

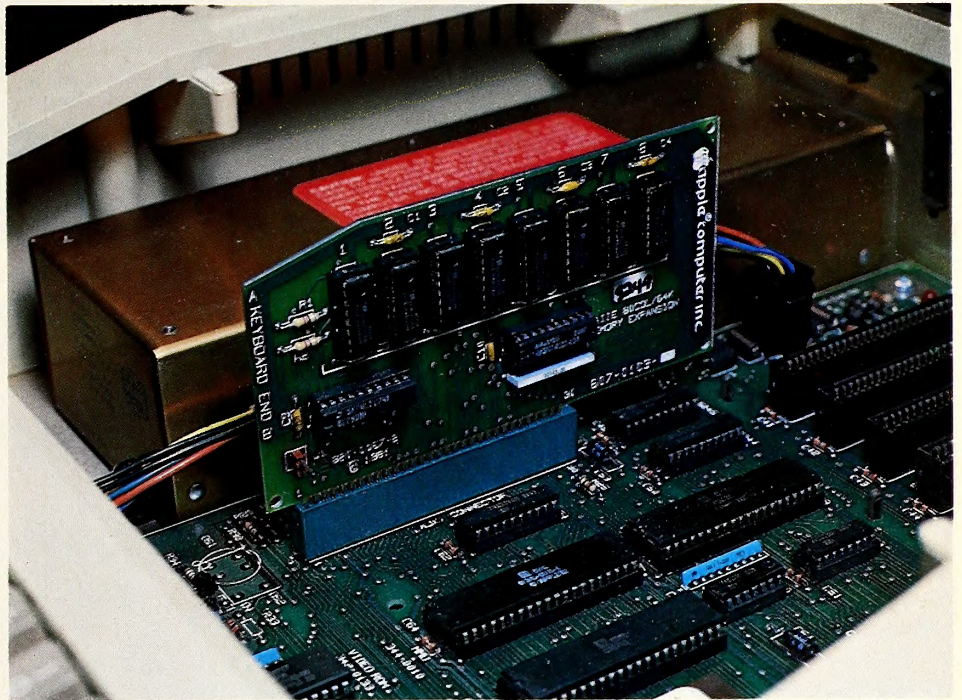
The Key Changes. But major changes there are, ranging from the keyboard to the innards.

The IIe keyboard contains sixty-three keys and is similar to the Apple III keyboard, sans keypad. This keyboard generates lower case as well as upper case characters, allowing it access to the full ASCII character set. The addition of up and down arrow keys completes a set of cursor controls independent of the old I-J-K-M convention.

Additional keys are tab, caps lock, delete, open-apple, and closed-apple. In ordinary usage, the open-apple and closed-apple keys are seen as paddle buttons. But applications software developers can employ these keys in a manner similar to the use of the control key—pressed simultaneously with another key, an apple key will modify the behavior of the original key.

Adoption of this keyboard should finally solve what has been a perennial Apple problem. Rod Holt left Atari to join Steve Wozniak and Steve Jobs almost before they left the garage. Holt designed Apple's power supply and has been a pioneering technical guru with Apple since the Apple I. He says the keyboard "has been the single biggest source of problems with customers."

The first keyboards had separate encoder—Holt likes to call them decoder—boards tucked underneath. The encoder board translated the keyboard signal into intelligible computerese for the motherboard, but



The Apple IIe Extended Eighty-Column Text Card sits in a sixty-pin slot located in front of where slot 0 used to be.



The new keyboard features a delete key. Note the reset key placed one step further out of harm's way.

the early models seemed to lack uniformity and had low heat resistance properties.

A change in late 1979 to General Instrument keyboards, which had a more reliable encoder, ameliorated the problem, but the IIe takes the solution one step farther. Signals from the IIe keyboard do not stop at an encoder en route to the motherboard. Instead, they travel unmodified to the motherboard, where they are encoded. One result is a keyboard more open to modification.

Apple is already exploiting that trait in machines marketed in non-

English-speaking countries. Although most software is written with directions and input prompts in English, users will want to store their data in their native language, which probably contains accent marks and special punctuation.

Special EPROM chips will contain both the American keyboard codes and codes for various foreign languages. The user will be able to select either set of codes at will by using a switch installed on the front of the case.

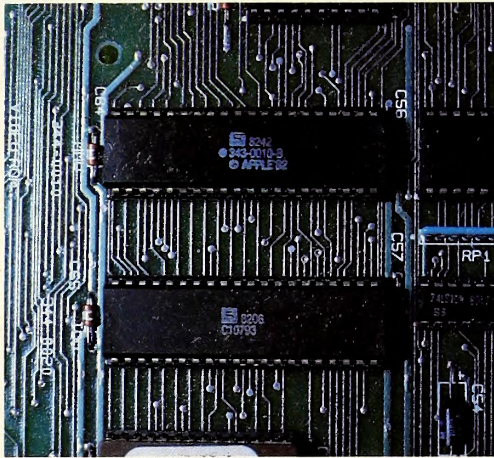
Equally significant changes on the motherboard are the culmination of a drive for simplification that began with Wozniak in 1978. The original Apple II used off-the-shelf MOS and TTL chip components. Woz began searching for ways to integrate functions to reduce the number of components on the motherboard. In pursuit of that concept, he engaged Synertek to design custom integrated circuits. Synertek put Walt Broedner in charge of the project, code-named Annie.

Working in conjunction with Wozniak, Broedner was making significant progress when the project was stopped dead in its tracks by the success of the Apple II Plus. The Plus, for those of you weak in computer history, was essentially a software modification. Integer Basic was replaced as the resident language by Applesoft, and the Autostart ROM, which truly made the Apple a turnkey machine, was added.

This first major alteration of the microcomputer set the precedent that Apple has since always followed: Keep your past customers in mind. Apple almost immediately introduced ROM cards that permitted early Apples to run Applesoft or later Apples to run Integer Basic. In that manner, owners of old Apples could upgrade to the new standard and owners of new Apples could take advantage of the software base developed using the old language.

Sales of Apple II Plus systems skyrocketed, making the company loathe to tinker with what was an outstanding success. Wozniak's IC project was shelved. It resurfaced temporarily a year later, under the name Alice; but those gals at the beginning of the alphabet seemed to be a jinx. Back into cold storage went the idea.

In the meantime, under the supervision of Wendel Sander, the Apple motherboard kept undergoing minor revisions. Less expensive 16K bit chips replaced the earlier 4K bit chips. Grounds on the board were



The MMU and the IOU are the two custom-integrated circuits responsible for the uncluttered look of the IIe motherboard.

improved during a change to meet Federal Communications Commission radio frequency emission standards.

Sander, who was the sixteenth employee of Apple and the writer of one of the first *Star Trek* games, viewed the motherboard revision projects as analogous to tinkering with the Volkswagen Bug—"small evolutionary steps and clean-up kinds of things."

But Sander's motherboard tinkering was not enough to head off Wozniak's integration project. It was reactivated in late 1980 under the code name Diana as a project to simplify manufacturing by reducing the component count. IIe engineering manager Peter Quinn says the change was absolutely necessary. During a period when the company was producing more than thirty thousand units a month, they had, as he described it, "a unit designed to be built in a garage."

Walt Broedner, the first designer to tackle Woz's concept, joined Apple to head the project, which became known as LCA, for "low cost Apple." Inside Apple, the term implied a lower cost of manufacturing. But others who caught wind of the project name decided it meant a \$350 Apple. To counteract that kind of misconception, the operation inherited a name that almost lasted the distance: Super II.

The motherboard that Sander had been caretaking had one hundred components. Broedner succeeded in reducing that number to thirty-one while increasing capability by the equivalent of an additional one hundred components.

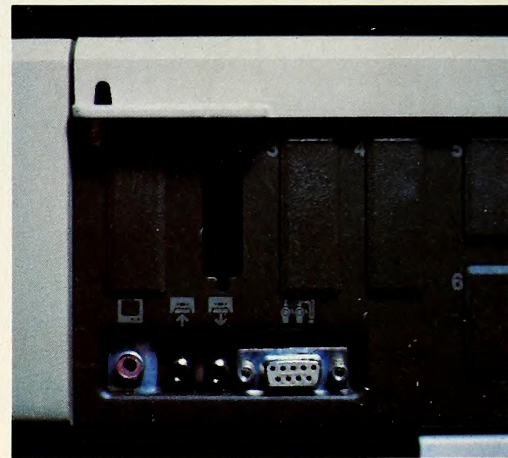
Renaissance Chips. Central to that success were two large black chips that sit near the 6502 microprocessor on the IIe motherboard: the

editing or data handling.

In this new RAM configuration, the MMU coordinates access to the RAM and supervises bank switching between Apple's ROM and the 16K of RAM that is the equivalent of the language card. While the MMU is so occupied, the IOU handles all the I/O functions of the redesigned keyboard, the peripheral slots, the game I/O port, and the forty and eighty column video output. The IOU also controls a set of memory locations that serve as soft switches, allowing the user to toggle between various graphics modes and display states.

Not only are there fewer chips in the IIe, the expansion slot configuration has changed. The on-board virtual language card eliminated the need for slot 0, so they took it out, leaving seven fifty-pin slots. Yes, Virginia, they're numbered one through seven. No more counting like the computer does.

There is an eighth slot, but it's not your common, everyday, run-of-the-mill, hey-let's-stick-something-here type of slot. It's a sixty-pin connector that sits forward of the other seven and allows a new set of signals that were not readily accessible to users and manufacturers of periph-



The new back panel with video, cassette, and game controller ports.

erals for the II Plus. Among the possibilities for the slot: a low-cost RGB monitor interface.

Apple is providing an eighty-column card for that slot for \$125. The card has room for the addition of 64K additional bytes of RAM, accessed through a bank-switching technique governed by the MMU. Although it's difficult to use this memory from Basic software, professionals and expert users will be able to use it as additional storage memory.

Because the eighty-column application uses only a portion of the capabilities of the slot, it's likely that peripheral manufacturers using the slot for other purposes will include eighty-column capability as a matter of course, opening up a new area of multifunction boards for the Apple.

In their implementation of the additional slot, Apple again showed an attention to detail that redounds to the user's benefit. Many current software packages assume the convention that an eighty-column card will be placed in slot 3 and activate the display with a pr#3 directive.

To remain compatible with existing software acknowledging that convention, Apple developed its firmware to recognize pr#3 as the eighty-column command if the card is in the special slot. The catch is that you can't use the regular slot 3 while the sixty-pin slot is being so addressed. Still, IIe owners will find that most existing software calling for eighty-column display will run just fine, a thoughtful touch.

Other visual differences inside the IIe include two LEDs. One is a power light intended as a hard-to-miss reminder not to remove interface cards while the power is on.

The other LED is primarily for production. Apple attacked the testing and quality control problem from two angles. During manufacturing, the motherboard can be put on a burn rack that rigorously controls temperatures and cycles the testing during the infant mortality stage. One quality control person monitoring large concentrations of tests can now have excellent control over the process.

Should a problem manifest itself in the field, the motherboard can be plugged in to diagnostic equipment at a qualified service center. The LED will serve as an indicator of problems, speeding diagnosis and serv-



The shift key that does more. Seen here with caps lock, open apple, and some new characters.

memory management unit (MMU) and the input output unit (IOU). Broedner's group was so successful in the design of these chips that the first prototypes burned were successful.

The use of 64K bit RAM chips in place of the 16K bit chips reduced the RAM banks from twenty-four chips on the motherboard and eight on a language card to a mere eight total. Standard RAM memory is expanded in this configuration to 64K bytes. The additional 16K not available on the Apple II Plus is treated like the old language card, allowing the user access to an extra language or additional memory space for text

MAGICALC™



The Visual Difference

	A	B	C	D
4	INCOME			
5		SALES		
6		SERVICE		
7		RETURNS AND ALLOWANCES		
8				
9		NET SALES		
10				
11				
12	COST OF GOODS SOLD			
13		COST OF SALES		
14		FREIGHT		
15		OTHER COST OF SALES		
16				
17		GROSS PROFIT		
18				
19		SALARIES		
20		PAYROLL TAXES		
21		RENT		
22		OFFICE EXPENSES		
23				

VisiCalc®

	A	B	C	D	E	F
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

	THIS YEAR		LAST YEAR	
	THIS MONTH	3 MONTHS	THIS MONTH	3 MONTHS
INCOME				
SALES	32722.70	95482.60	26473.61	74353.67
SERVICE	890.00	2233.65	0.00	0.00
RETURNS AND ALLOWANCES	45.00	45.00	223.00	473.00
NET SALES	33567.70	97761.25	26696.61	73880.67
COST OF GOODS SOLD				
COST OF SALES	5978.89	17043.79	4733.82	14242.84
FREIGHT	364.70	333.45	297.54	855.31
OTHER COST OF SALES	27.00	120.30	0.00	0.00
GROSS PROFIT	27197.11	79563.71	21665.25	68782.52
SALARIES	7477.25	23516.45	6433.21	20599.27

MAGICALC™

See for yourself.

MAGICALC™—VisiCalc® COMPARISON

- MAGICALC does everything VisiCalc does
- MAGICALC does a lot more than VisiCalc does
- MAGICALC does most things faster than VisiCalc does
- MAGICALC does many things a lot easier than VisiCalc does
- MAGICALC loads VisiCalc files
- MAGICALC cost a whole lot less

MAGICALC FEATURES

MAGICALC has:

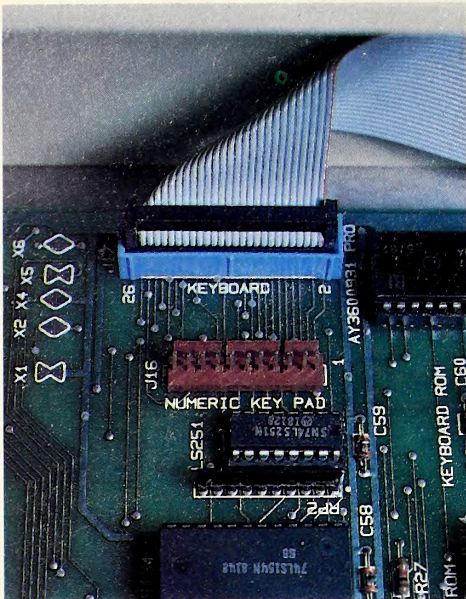
- Full compatibility with Apple //e

- 40-column standard video display
- 70-column upper- and lower-case video display
- 80-column board video display
- Automatic support of add-on memory boards (up to 512K)
- Individual column widths
- Protected fields and cells
- Invisible column
- Automatic page formatting (worksheets are automatically placed on paper)
- Fully compatible with VisiCalc and DIF files
- Command compatible with VisiCalc
- Command compatible with MAGIC WINDOW
- File loading by number

\$149⁹⁵

5547 satsuma avenue • north hollywood, california 91601 • 213/985-2922





The new keyboard connection and matching keypad connector on the motherboard.

icing. Manufacturing boss Quinn is not expecting too many field problems, however. The reduced chip count, better manufacturing, and tighter quality control should result in "awesome" reliability. He says, "You should be able to fire a howitzer at it."

Another innovation inside the IIe is an eleven-pin connector for a numeric keypad. Apple's Accessory Products Division has a keypad for use with this connector.

There are invisible differences inside the IIe also. The II Plus had 12K of firmware on which were encoded Applesoft, the Monitor, and the Autostart ROM. The IIe has 16K, 12K of which duplicate the II Plus. The other 4K contain the eighty-column firmware and a keyboard-activated self-test.

The self-test is activated by pressing the control key, the closed-apple

key, and reset simultaneously. The IIe then conducts a twenty-second diagnostic of its internal circuitry.

A II Is a II Is a Two. Other differences between the IIe and the II Plus appear on the back panel. A nine-pin game control connector is situated next to the cassette jacks so you won't have to remove the top to change game controllers. Apple is already offering joysticks and paddles compatible with the new, sturdier plug.

The back panel itself is further shielded with a metal plate to cut down on radio frequency interference. The cable notches found in the back of the II Plus have been replaced with twelve capped holes of various sizes. Interface cables for all Apple's peripherals will have adapters so that a cable inside the Apple will lead from the interface card to a hole in the back panel where a plug will be installed. The cable from the peripheral attaches to this plug on the outside. Once installed in this way, any peripheral can be disconnected without opening the case.

Even the lid came in for new attention. Pads were put on the back of the lid to make the top easier to remove for those who are so inclined. For those who are not, such as educators with a classroom full of youngsters, there are two new holes in the lid that allow it to be screwed shut.

For all of these changes, the IIe is still very definitely an Apple II. It has the same Monitor routines and it uses the same disk operating system—the one Wozniak wrote out by hand in a few hours, a feat Rod Holt witnessed and termed incredible. It still looks essentially the way Jerry Manock designed it.

It is compatible with most of the software and peripherals that exist today. That's by design. Hundreds of hours were spent ensuring compatibility, even to the point of calling some software publishers and making information available to them so they could bring their software into line with both the II Plus and the IIe.

That's known as keeping the faith with those who helped you get where you are, and Apple has won the hearts of the software industry. Ten software publishers announced specially tailored packages for the IIe at the unveiling. Simultaneous announcements at other sites by other publishers brought that number higher. No other microcomputer has benefited from such an outpouring of tangible outside support at the time of its introduction.

Nabbing the VisiNod. Many of the software packages are significant, but perhaps none more so than the presence of *VisiCalc: Advanced Version*.

The symbiotic relationship that once existed between VisiCorp—then Personal Software—and Apple has been well documented. Apple transcended the damning epithet of toy essentially on the strength of *VisiCalc*. Likewise, Apple was the only microcomputer in mass distribution that was powerful enough and open enough to give Dan Bricklin and Robert Frankston the wherewithal with which to work.

There was a time when VisiCorp had many of the same private investors as Apple, the same bankers, the same ad agencies, the same growth curve. People started saying VisiCorp was in the Apple emulation mode.

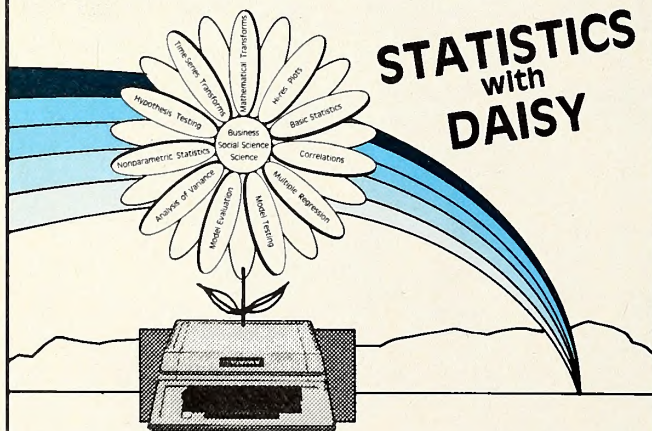
Recently, there's been more distance between the two companies. Apple has other spreadsheet products and VisiCorp is less dependent on its Apple sales for growth. And even when *VisiCalc: Advanced Version* came out for the Apple III, there was a clear understanding that the IBM Personal Computer would be next.

Indeed, the companies were proceeding along parallel lines in developing an overall user friendly approach to software—Apple through its Lisa and VisiCorp through its *Visi-On*. With the two companies striving to be best at bringing Xerox Star technology to microcomputers, it looked like rapprochement might never occur.

Instead of an ever widening rift, the 128K version of the IIe has again brought VisiCorp to the fount from whence their wealth originally sprang. In choosing the IIe over any other micro as the successor to the II for its *Advanced Version*, VisiCorp has essentially ratified the IIe as leader of the pack. A IIe version of *VisiFile* is also in the works. VisiCorp's David Spenser calls the IIe "a nice machine. It's going to do well."

Exciting from the perspective of the approach to the IIe market are the offerings from Microsoft and Broderbund. Microsoft's *Multiplan*, which has been narrowing the gap between it and *VisiCalc* in the Apple market, will recognize the IIe and take advantage of its extended mem-

Our DAISY puts out...
With more data analysis power at a lower price...



"... one of the best Statistical packages yet to be released for the Apple. For the price, perhaps the best..."

— Cider Press

Interfaces with VisiCalc, VisiPlot and DB Master.

FREE comprehensive Catalog and Newsletter with any purchase. Otherwise send \$2.00 U.S./\$5.50 Foreign to cover shipping and handling. Ask about our special BONUS offer.



Mall Order Dept. No. 5T
19517 Business Center Dr.
Northridge, Calif. 91324

"It covers 65-70 percent of my needs for data analysis and it provides me with options for data entry and manipulation that make it easy to prepare for the other 20-25 percent."

— The Computing Teacher

Requires an Apple® 48K with Applesoft ROM and DOS 3.3

Ideal for business, scientific, and social science applications.

Phone orders only (Need Mastercard or Visa)
U.S.A. (except Calif.) (800) 423-5441
Calif. and Foreign (213) 349-0300
For information or technical questions (213) 349-5560

Open Tues. - Fri.

*Apple is the registered trademark of Apple Computer Inc.

Add \$2.50 U.S./\$10.00 Foreign for shipping. California residents add 6% sales tax.

\$79.95

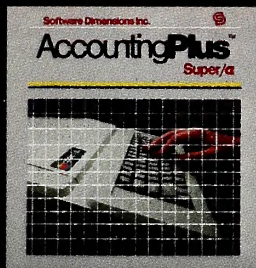
A fresh Apple deserves fresh software.

Software Dimensions first unveiled Accounting Plus in 1980. Since then, it has consistently been recognized by leading computer magazines as one of the world's top-selling business accounting packages.

Now, there's Accounting Plus Super/e, brand new and developed especially for the new Apple IIe. Accounting Plus Super/e is an impressive financial package designed to give you total control over your company's fiscal operations. The system consists of five interactive modules that efficiently and effectively handle fundamental accounting tasks for small businesses. It incorporates General Ledger, Accounts Payable, Accounts Receivable, Inventory, Payroll and more!

This user-friendly system is totally menu-driven. On-screen prompts guide you every

step of the way. Flexible and versatile, Accounting Plus Super/e can be used with either two or three floppy disks or a hard disk. Complete cursor control simplifies editing, and a unique "screen dump" feature permits you to transfer any information appearing on the screen to the printer at any time.



The Accounting Plus Super/e General Ledger maintains a complete audit trail for up to 500 accounts. With automatic posting capabilities and an extensive reporting system, Accounting Plus Super/e simplifies traditionally complex, tedious tasks, including payroll and inventory.

Power. Efficiency. Ease of operation. These are the hallmarks of Accounting Plus Super/e, the most advanced accounting management system you can buy...right down to its new package design with built-in copy stand.

Accounting Plus Super/e puts accurate, reliable answers at your fingertips... So you can spend more time counting the fruits of your labors.

See your Apple dealer for complete details and an impressive demonstration.

The time is ripe. Introducing Accounting PlusTM Super/e.



Software Dimensions Inc.

6371 Auburn Boulevard
Citrus Heights, CA 95610
916/722/8000

Only Super-Text™ Lets You Choose

...40 character screen display

...or 56 character screen display

...or 70 character screen display

You're a winner when you choose the exciting Super-Text 40/56/70, the only word processor that offers three different screen displays without the use of any additional hardware! At \$125.00, Super-Text 40/56/70 gives you features you might not expect for so little cost: page headers and footers, multi-file search and replace, easy to read documentation and quick reference card, and easy text handling all the way through.

And introducing a unique Super-Text feature: design your own characters! Now you can create text in cursive, with accent marks, in any foreign language you need!

Super-Text 40/56/70 . . . another reason why MUSE Software is one step ahead.

**For the Apple II with 48K and disk drive, retail price \$125.00.
Available at computer stores everywhere. Write or call MUSE
for information and the name of the dealer nearest you.**

Apple II is a trademark of Apple Computer Corporation.



MUSE

SOFTWARE™

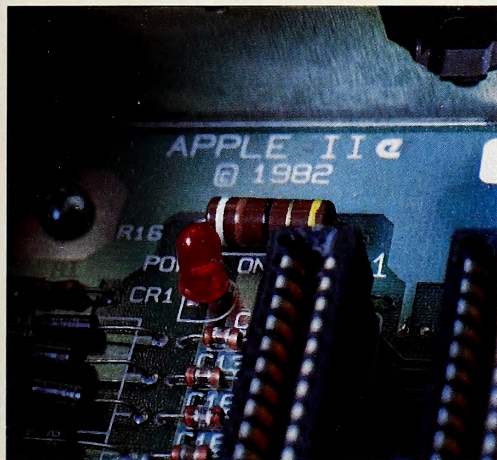
347 N. Charles St.
Baltimore MD 21201 • 301-659-7212

One Step Ahead

ory and eighty-column features from the same disk that runs on the II Plus. As a caveat to that statement: Make sure the version of *Multiplan* you get is 1.04 or later. Microsoft is also bringing out the *Applesoft Compiler* in a IIe version.

Broderbund took the same tack as Microsoft. Their *Bank Street Writer* will run on either the II Plus or the IIe, automatically recognizing which machine it is in and adapting itself to the features of that system. New IIe owners need beware, however. Some early Broderbund product was not initially compatible with the IIe. The company has taken corrective action, but make sure you buy the right version.

The combined package approach is a heartening trend for the several hundred thousand II Plus owners. If publishers follow the lead of



The extra power light inside the IIe case serves as a reminder not to play with interface cards while the machine is on.

Microsoft and Broderbund, there'll be no shortage of new software for the older machine, nor will there be any confusion in the marketplace—one size fits all.

The Jack of Apples. The appearance of *The Incredible Jack* from Business Solutions among the IIe specific software is almost a travesty. If there were any justice, Business Solutions would be the only company making a software announcement. This is the single current program that from the conception stages was intended for the IIe only. When Apple's development time on the new machine became extended, Business Solutions retrofitted it to the II Plus.

The Incredible Jack draws its name from your ordinary garden-variety jack-of-all-trades. That's what this program is: a spreadsheet, a database, and a word processor in one integrated package. It's the Apple and eight-bit answer to *MBA* and *1-2-3*, widely heralded and praised software packages for the IBM pc.

The IIe is even generating converts among the heretofore unwashed. Or perhaps it's more apt to say the only hesitantly converted. Software Dimensions has had a potent accounting series for some time, doing excellently in the CP/M world. Their interest in Apple was not what one might call intense, as indicated by the fact that they parceled the rights in the Apple market off to Systems Plus, a professional marketeer.

The package was *Accounting Plus* and Systems Plus moved aggressively into the market, seizing the high ground from Apple's BPI package and consistently running as the second-ranked accounting series. Recently Software Dimensions had tentatively entered the Apple market in their own right in support of the package. But an ostensibly CP/M-based company with apparently lukewarm feelings about the Apple market is not a likely place in which to find enthusiasm about an upgraded Apple II.

Nevertheless, enthusiasm is where you find it, and few wax as enthusiastic about the IIe as Jeff Gold, author of the package. Software Dimensions began their effort as a simple conversion, changing as few lines of code as possible to get the benefit of the advanced features.

As they delved into the system, they began to get excited about the possibilities the IIe presented. They felt the added features gave them the potential to write the best accounting series found on a micro. In the end, they gutted the code from their five-module series and built five new modules that specifically use all the new features to the maximum.

Gold claims, "... the Apple IIe is a strong enough product that it de-

serves its own program." That's what it got in *Accounting Plus Super/e*. Three modules—general ledger, accounts payable, and accounts receivable—are ready for sale, with inventory and payroll to follow soon.

Apple's documentation section rethought its approach to a novice user in its manuals for the IIe and appears to have put together the best bunch yet by a major manufacturer, although that's faint praise in an area where mediocrity abounds.

But they'll get some immediate help in bringing the new IIe owner on board from Muse. The Baltimore folks seem to have done the most work of any company, changing their entire line to take advantage of the additional features. For the first-time owner, Muse's *Know Your Apple IIe* should be a must buy.

In addition, two versions of *Super-Text* are major contributions. *Super-Text Professional*, formerly known as *Super-Text 40-80*, and *Super-Text Home/Office*, formerly known as *Super-Text 40-56-70*, are available in special IIe versions. The Pro version adds on-screen formatting and on-line help functions to an already strong package.

One of the companies needing to do the most work was Sierra On-Line. Some was voluntary, but some was not. Sierra voluntarily sank man-months of effort into recasting *ScreenWriter II*, their bestselling word processor. Using the computer's lower case and eighty-column capabilities cut 8K off the code. Sierra also modified *General Manager* for use on the IIe, girding for a battle with VisiCorp's *VisiFile*. The Sierra On-Line packages are marketed separately for the IIe and the Plus currently, but Sierra president Ken Williams vows to join the one-package-fits-all crowd before the dog days of summer.

Keystone Ken. Sierra found their new copy protection scheme, Spiradisc, wouldn't run on the IIe. So it was back to the drawing boards in search of a new scheme that'd secure the code and still respond to the IIe. Never a dull moment in the cops-and-robbers trade.

Clearly, the software publishers think the new machine is business-oriented. Heavy duty competition is already apparent among the spreadsheet, database, and word processor programs. Artsci magnifies that competition with its two modified entries, *Magic Window IIe* for the

GOTO 142

YOUR ANSWER
FOR

CP/M

communications

"THE ULTIMATE CP/M TERMINAL PACKAGE"

FOR THE CP/M APPLE EQUIPPED WITH
A Z-80 MICROPROCESSOR CARD!

- Send ANY size or type of CP/M file including such difficult ones to send as .COM, .DBF & .DAT! • Supports all Apple CP/M compatible hardware such as Modems, Disk Systems, Display Devices including 80 Column Cards & External Terminals
- Large variety of baud rates: BAUDOT (deaf TTY), 110, 300, 1200 - 4800.

AFFORDABLY PRICED AT \$149.95

southwestern data systems™

P.O. BOX 582-S • SANTEE, CA 92071 • 619/562-3221

Explore the Frontiers of Intelligence

THE MIND OF MAN

Chess, Checkers, and Odin (as played by U.S. Othello Association rules) are classic games of the intellect. They evolved over the centuries as a way to understand complex situations and achieve mastery in action.

Now, by interacting with the intelligence embodied in these programs, you can participate in the exciting challenge of the **Mind of Man**.

FOR ALL GENERATIONS— A NEW GENERATION OF INTERACTIVE INTELLIGENCE

Chess, Checkers, and Odin are unique—in playing strength and in what they let you do. You can try out any idea—and even get ideas from the programs themselves. Plus, it is easy and fun to play the games and use their many features:

- Different levels of play, from beginner to expert
- Advice on best move
- Take back and replay moves
- Auto and manual modes
- Instant replay of games
- "Change" feature adds or subtracts pieces
- Sophisticated opening libraries
- Clear graphics
- Instructions include chapter on skillful play.

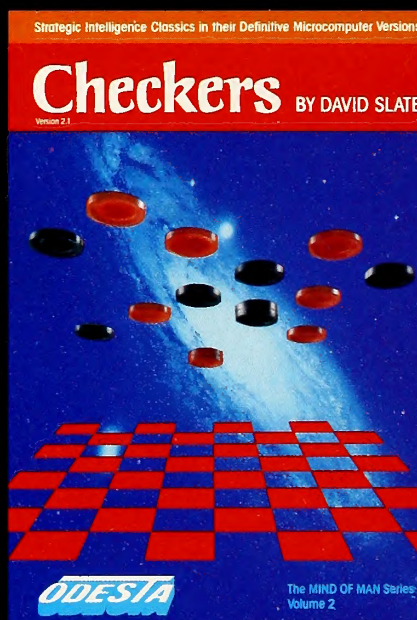
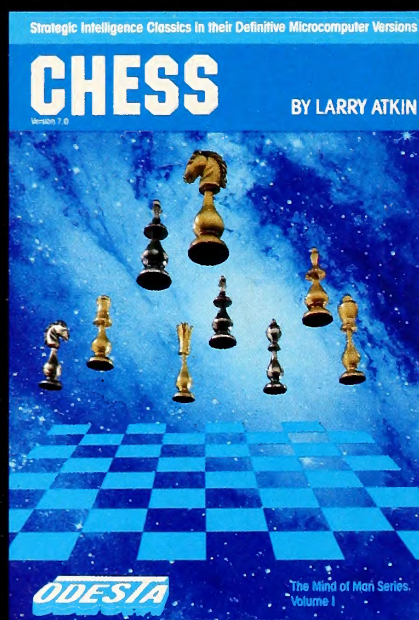
THE PEOPLE BEHIND THE PROGRAMS

LARRY ATKIN AND DAVID SLATE

Authors of the Northwestern University 4.7 Computer Chess program; Winners of the World Computer Chess Tournament, 1977-1980; Winners of 8 North American Computer Chess Championships between 1970 and 1979; Two of the world's authorities on machine intelligence.

PETER FREY

Professor at Northwestern University, teaching courses in Psychology and Computer Science. Editor of and contributor to the definitive text on computer chess: **Chess Skill in Man and Machine**. One of the U.S. Othello Association's top-ranked players.



CHALLENGES THE PROFICIENT; INSTRUCTS THE BEGINNER.

A new microcomputer standard for what many consider to be the ultimate game of the intellect. In addition to its superior playing strength, **Chess** from Odesia introduces a new generation of interactive intelligence—with 27 cursor-controlled features, including:

- Advice and prediction of best moves
- Save games to disk
- Graphic illustration of attacks and defenses
- Variations of blind-fold chess
- 17 levels of play, including postal and mate-finder modes
- Enactment of over 30 classic human and computer chess games
- Plus—an opening library of over 7000 moves.

For those who want the best.

YOU'VE NEVER KNOWN CHECKERS LIKE THIS!

Learn the complexities of this surprisingly sophisticated strategy game by interacting with **Checkers'** 24 user features:

- Play against 16 levels of difficulty
- Watch **Checkers** play against itself—one level against another
- Switch to "Give-away" mode, where the object is to make your opponent take your pieces
- Watch the **Checkers** movie—an instant replay of a whole game
- For those interested in the inner-workings of "programs that think", adjust 58 program parameters, so that **you** can experiment with the way **Checkers** itself thinks, and how it plays.

An ideal introduction to artificial intelligence.

WHY ARE 20 MILLION PEOPLE PLAYING THIS GAME?

A classic board game, where the object is to entrap your opponent's pieces—but only at the right time. The rules of play are simple and the game fast. At your disposal are the full range of features found in all of Odesia's **Mind of Man** series. You will need them, along with your keenest insight and deepest perception, to master the secret of **Odin** (playing by U.S. Othello Association rules). Join the growing number of strategists exploring the subtleties of a game that may change the way you think.



930 Pitner
Evanston, IL 60202
(U.S.A.)

Chess: \$69.95
Checkers: \$49.95
Odin: \$49.95

See your local software dealer, or order
(Mastercard or Visa):
800-323-5423
(in Illinois, call 312-328-7101)

For Apple II, Apple II Plus 48K disk
systems, and Atari 48K disk systems.
Odin is also available for TRS-80 Model
1 & 3 32K disk systems.



Unless otherwise noted, all products can be assumed to run on either Apple II, with 48K, ROM Applesoft, and one disk drive. The requirement for ROM Applesoft can be met by RAM Applesoft in a language card. Many Apple II programs will run on the Apple III in the emulator mode.

A.E. by Jun Wada and Makoto Horai. *A-One* would be a more appropriate title than *A.E.* The folks from San Rafael, with a little help from Tokyo, have another winner, another game that's a joy to behold and a pleasure to play.

The object is to chase out of the city, the planet, and the whole galaxy some scientific experiments run amok. The experiments were intended to be pollution control devices; gone wild, they swoop, soar, and strafe with a vengeance. *A.E.* stands for stingray in Japanese, which is what the berserker safeguards look like: flying stingrays. (Not the General Motors variety, but the type you would not wish to step on at the beach.)

The mechanical flatfish attack in waves of six, flying in and out of the scenery with reckless abandon. In and out of, in front of, and behind, all in striking 3-D. There are eight different scenes, each progressively farther removed from home, representing your success in chasing the stingrays farther away. In each case, the *A.E.* dart in and out of buildings, mountains, asteroids, planets, and stars. Sometimes the stingrays split into pairs or trios to attack in concert; sometimes they attack individually. They drop bombs with some frequency, although their favorite technique for destruction appears to be a simple hit and run.

To discourage these pocket mantas and drive them from the current surroundings, you have to destroy three waves in their entirety. Should just one of a wave escape during an attack, it returns with a full complement of its kind. It takes getting all of three groups to go on to the next scene.

Shooting at the stingrays in *A.E.* involves greater precision in timing than the usual frenzied button-pounding type defense. When you fire, you launch a delayed blast projectile; letting up on the trigger stops the missile and detonates it. Thus, you can shoot at the *A.E.* when they appear far in the distance, tiny and close together, or when they're full-size up close. Exploding a projectile right in front of a moving line of stingrays can result in some interesting chain reactions. It's not uncommon to wipe out an entire wave with one well-placed shot.

The graphics in *A.E.* are superb. The stingrays smoothly transform from specks in the distance to graceful flyers in the foreground, swirling and diving in a seemingly endless variety of patterns before ducking behind a planet or vanishing into the distance. This is the first computer arcade ballet! Even the chain explosions are detailed and smooth. Curiously, authors Wada and Horai have chosen to use only three colors; it works nicely.

Best of all, *A.E.* plays well. The game involves thought and timing, not simply reflexes. There is enough variety in each level to prevent boredom. As the game progresses, the stingrays change patterns; they quit playing follow the leader and attack singly or in pairs, making it much harder to wipe out all participants in a wave.

And so the parade of winners from Broderbund continues. **DA**
A.E., by Jun Wada and Makoto Horai, Broderbund Software (1938 Fourth Street, San Rafael, CA 94901; 415-456-6424). \$34.95.

Pinball Construction Set. By Bill Budge. If you've been losing sleep wondering when Bill Budge was going to come up with another program, you can kick the Sominex habit. And rest assured: Budge's second offering on the BudgeCo label is every bit as significant as his first and even more innovative.

Arcade games are plenty of fun, but they stir a special yearning in some. There are many more people capable of designing a good game than there are people who can write the code to prove it. So the original

pinball wizard has donated his programming skills to the benefit of all those who would try their hands at pinball game design. And he has done it extremely well.

The *Pinball Construction Set*, which Budge has dubbed the first software toy, is disarmingly easy to use. He has provided an array of tools, paints, and parts and the walls of a generic pinball game layout. You manipulate all the objects with a joystick; you hardly have to touch the keyboard.

Each tool's function is represented by its hi-res shape. A pointing hand moves copies of the objects from the parts display to the pinball board, leaving the original as it was. If you decide you don't like where you put it, pick it up again and move it. To get rid of it altogether, drop it anywhere in the parts display and it will vanish. Sloppy work habits aren't forbidden; they're impossible.

Walls are built and shaped with other tools. Selecting any of these tools causes the program to display small white squares along the edges of the walls. The walls behave as if they were defined by rubber bands stretched between these points. With an arrow pointer you can move any of the points, and so change the shape of the wall. You can add points with a hammer and remove them with a pair of scissors. Budge may mix his metaphors, but he gets the point across. With these three tools, you can create walls that break at odd angles or define elegant curves. And, no matter how complicated a wall you design, the ball bounces or rolls off it right every time.

By the time you've set up a wall or two and put in a pair of flippers, you'll probably be itching to bounce a ball around and see how it works. As easily done as said: simply put a ball on the board and push the play button. (Like all the other buttons and tools, this one is marked with an appropriate hi-res symbol rather than a word. You not only don't have to be a programmer to make a good pinball game, you don't even have to be literate.)

When you hit the play button, any balls you placed on the board start to roll. You hit them, they bounce off objects, score points, and so on. When you've seen enough, you can go back to add, move, remove, and redesign. Then try it out again until you get it right.

Aesthetic appeal is as important as function in a good arcade game. Budge has provided for artistic expression with two painting modes. With one, indicated by a paint brush, you can color entire areas with a warp-speed fill routine. For the fine detail work—anything from little pictures to your pinball machine's name in big, bold type—you can use a magnifying glass pointer to edit the screen pixel by pixel.

Other buttons control other functions. A picture of an *and* gate gets you the wiring kit, with which you can decide the scores for all the objects in your game. You can even tell it to award bonus points for hitting special combinations of targets.

A button that will appeal to the megalomaniac in everyone is shaped like the world. It allows you to change the laws of physics in your game, adjusting the pull of gravity, the kick of the bumpers, the elasticity of collisions with the wall, and even the passage of time itself.

The final button takes you to the disk menu. Here you can save your work in one of two forms. You can put it in a data file so you can modify it at a later time. Or you can compile your game. Then you can play it any time, copy it, or give it to your friends. The compiled game runs independently of the *Pinball Construction Set* program.

Bill Budge seems to have spent his professional life setting standards for other programmers to follow, and *Pinball Construction Set* is no exception. Budge's joystick-controlled symbolic menu, allowing options to be selected without your work ever leaving the screen, is so easy that it makes designing the games more fun than playing them. **DD**

Pinball Construction Set, by Bill Budge, BudgeCo (428 Pala Avenue, Piedmont, CA 94611; 415-658-8141). \$39.95.

Bank Street Writer. By Gene Kusmiak and the Bank Street College of Education. "It's all right, I s'pose," our recently anticomputer art director said of the following review, "but it doesn't capture what I feel about *Bank Street Writer*."

How, then, did he feel?

"Delirious!"

"Until now all I could do on the Apple was play games. But *Bank Street Writer* does stuff."

"Yesterday, I looked around the office for a computer with a printer and paper. I didn't consider what it had in it or anything. And *Bank Street Writer* didn't care. It just booted and I wrote and it printed and I sealed and mailed."

"I don't have to learn computers to use one anymore. That's what's really great about *Bank Street Writer*. It just does stuff!"

The preceding is a true story; documentation available upon request from the horse's mouth.

The reviewer couldn't say it as well as the horse, but here's the review anyway to fill in the details.

Broderbund doesn't hesitate to do the unexpected. Consider the new word processor from this publisher of top quality, future-of-the-art programs: it won't give you eighty-column display, or complex formats, or macros, or split screens, or superscripts, or subscripts, or footnotes, or graphics in the middle, or underlining, or expanded text, or instant success.

But what it will do it does with grace and excellence, and what *Bank Street Writer* will do is simply all you ever need for word processing at home or in the executive suite.

Bank Street Writer provides general word processing capabilities in a simple, uncomplicated program that just about anyone can have up and running in less than ten minutes, and it does it at a very low price. The closest comparative word processor is the original *Apple Writer*, except that *Bank Street Writer* is, withal its simplicity, state of the art.

The surprise is all the things *Bank Street Writer* does do. It has global search and replace, and it remembers for you to go to the beginning be-

fore searching. It moves sections of text around according to your will, and it puts them back if you change your mind. It indents and centers, though it doesn't justify (justification without proportional spacing would be better forgotten anyway).

And, when you boot it up, it knows what machine it's running on. *Bank Street Writer* requires 48K, but if you have 64K, it automatically uses it; if you have a IIe, it simplifies itself even more by using the arrows instead of the I-J-K-M diamond for editing and the open and close apple keys for moving around the menus. And, if your IIe happens to be equipped with 128K, it extends itself into that area too.

Other modifications are available with your help. On the IIe, of course, *Bank Street Writer* automatically uses shift key upper and lower case. On IIs, you must tell it if you have a shift key mod. *Bank Street Writer* recognizes all lower case chips. On all machines, you must tell it where your printer lives, what disk drive you want it to send data to, and all that sort of thing. But you need only tell it once, unless you change your mind.

Not all the screen is reserved by *Bank Street Writer* for input. The input area is delineated by a rectangle. In a four-line area above the rectangle appear all the commands you need for what you're doing, including the commands to stop what you're doing and do something else instead. If you want to move a paragraph, you first move to the menu; although your text stays on the screen, you can now move all around it via the editing keys for your computer. *Move* appears as an item on the menu. When you invoke it, clear instructions about what to do next appear one after another as you carry them out.

From the menu, you can go to the transfer menu (that's all there is) where you can transfer stuff to or from disk, in and out of memory, or onto paper and transfer yourself out of the program.

There are a few other commands, unnecessary but convenient, that you can learn from documentation—or you can get along very well without them if you please. These are for things like indenting blocks of copy, centering things, moving to the beginning or end of data, or moving in twelve-line chunks.

Bank Street Writer prints drafts—always the same—and final copy, for which you get to override your saved format choices.

Broderbund doesn't hesitate to do the unexpected. No one could imagine why on earth they would be bringing another word processor into a market swimming in them; no one had expected them to do that.

Now it's out and it isn't what anyone expected: not a competitor at all, but a new idea. They've brought a Ford into a field glutted with Cadillacs and Lincolns and Mercedes.

Now that we've seen *Bank Street Writer*, what won't be unexpected is watching it take off like the Mustang.

Bank Street Writer, by Gene Kusmiak and the Bank Street College of Education, Broderbund Software (1938 Fourth Street, San Rafael, CA 94901; 415-456-6424), \$69.95.

Bolo. By Elvyn Software. Unheralded and unassuming, *Bolo* may well become one of the hit games of the season.

Bolo is officially a home-arcade game, but there are elements of other genres. It takes place in a maze, but the maze resembles those of *Wizardry* or *Wayout* more than that of *Pac-Man*. It's a shoot-out, but you must go find the little devils; they won't bother you until you're near their fort. Even then, at a point apiece it doesn't much matter whether you shoot them or not; your object is to destroy their forts—at a hundred points apiece, six per maze. Prices rise with levels.

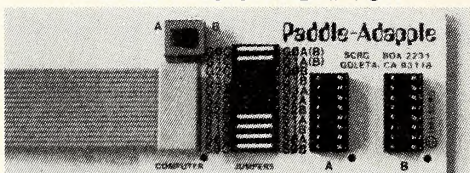
The maze is generated anew every game; you can see about 1/132 of its clean, fine, hi-res walls per screen; you can also see your fire-direction indicator and a chart showing in which directions from you the forts are located. Then you hunt for them.

You can control your speed just as you control direction. You can shoot in other directions than you're moving. When you come upon the little monsters, they tool along at a fixed speed, rather like ants about an anthill. They shoot back, however. In fact, they shoot first, if they spot you first.

On level two and up, the critters aren't so obliging; they come after you, knowingly and fast. Besides choosing your level, you can opt for denser mazes—they're harder to manipulate, but it's rumored that the baddies can't gang up on you quite so much.

Paddle-Adapple

I/O EXPANSION ADAPTOR



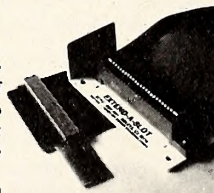
- Works with all Apple compatible joysticks and paddles • Unique "Jumpers" socket allows you to configure to meet your needs • Select one of two devices or use 4 paddles simultaneously • Gives you four pushbutton inputs • Supports shift key modification • Exchange X & Y joystick axis • Small & compact—adheres to computer with supplied foam tape • All strobes, annunciators and power available on both connectors.

\$29.95

EXTEND-A-SLOT

The EXTEND-A-SLOT brings a slot outside your APPLE™, allowing an easy change of cards. The 18" flex cable is long enough to allow placement of the card in a convenient location. The high quality connectors are gold plated for reliability.

The EXTEND-A-SLOT works well with all slow to medium speed cards, such as Modems, Printers, Clock, Music, etc. It is not recommended for high speed data transfer devices such as disk drive controller cards.



\$29.95

These fine products come with a 90 day warranty

Available at your local dealer or direct from:

SOUTHERN CALIFORNIA RESEARCH GROUP

Post Office Box 2231-S Add \$2.50 for shipping.

Goleta, CA 93118

\$5.00 outside U.S.A. &

(805) 685-1931

Canada. CA add tax.

VISA, MASTERCARD accepted

Apple is a trademark of Apple Computers

Somehow, these simple ingredients have been put together in just the right dosages to be totally enthralling and delightful.

When you've played yourself out on *A.E.* and *Wavy Navy* and you're not really up for the creative experience of *Pinball Construction*, you're apt to find yourself reaching again and again for *Bolo*—a truly relaxing, truly engrossing, thoroughly challenging, altogether very addictive game.

Bravo, Synergistic.

MCT

Bolo, by Elvyn Software, Synergistic Software (830 North Riverside Drive, Suite 201, Renton, WA 98055; 206-226-3216). \$34.95.

Karel the Robot. By Richard E. Pattis. Karel is a strange kind of robot—he won't cook or wash dishes, and he can't fly a spaceship or run a city. In fact, he can't do much of anything in the Real World . . . but he can do an interesting, and possibly useful, thing inside your head: he can teach you to think in Pascal.

Pascal is a programming language for computers, a set of rules that lets you write instructions to the machine that it can "understand" and execute. There are several programming languages around—Basic is one—but Pascal is fast becoming the most popular for many applications. This is partly because it can "talk to everybody"; it runs on many different kinds of computers and its programs are organized so that anyone can follow the logic, given the rules.

Karel the Robot runs on a subset of Pascal—a simplified version, a sort of "pidgin Pascal," that will help you get used to the rather odd structural requirements of the language. Karel can teach you most of the grammar and syntax of Pascal and the rules of logical organization; once you have that foundation, learning the rest should be easy.

Karel—named after Karel Capek, whose play *R.U.R.* gave us the word *robot*—is a very simple robot in a very simple world. He has few capabilities and no mind of his own; but within his limits he's the perfect slave—he obeys orders exactly. Of course, you have to give him exactly the right orders. . . .

Karel takes his orders from a program, written in advance by you; and therein lies the challenge: to design a program that will accomplish

his task. However, this is not as difficult as you might think, for two reasons: first, you (the programmer) choose what task Karel is to do, so you can make it as easy as you want; and, second, Karel's world is so simple and his abilities so limited that you don't have a great many possibilities to choose among.

Karel's world is a rectangular grid of *streets* (running east-west) and *avenues* (running north-south). The world also contains *walls*, which can be built across a street or avenue, blocking Karel's path; and *beepers*, small objects that Karel can pick up, carry with him, and put down again.

Karel's working vocabulary consists of four instructions: Move, Turnleft, Pickbeeper, and Putbeeper. *Move* means "straight ahead one block"; the others are obvious. There is also a fifth instruction, Turnoff; but that's an end-of-program mark, not a working instruction.

Karel can also make various *Tests*, to determine which direction he's facing in, or whether he's next to a wall, or if there's a beeper on the corner with him, and so on. And he can choose what to do next on the basis of the Test results—known to programmers as conditional branching.

He can do program loops, too, repeating an action until a certain result is achieved. And there is a rule for creating new instructions out of combinations of old ones—for example, you can define a Turnright instruction. For all its simplicity, Karel's instruction set is actually quite powerful.

And that, of course, was the idea; simple, so it would be easy to understand and learn; and powerful, so Karel could behave in some ways like a real robot.

One thing about this program is very unusual. Most programs come with a book of some sort, but the book is less important than the program itself—a support device for the program. With Karel, the program is a support device for the book.

The book is called *Karel the Robot: A Gentle Introduction to the Art of Programming* (also available separately), and is a complete textbook in the programming language Karel uses, which was designed specifically as

How to Choose the Best Modem For Your Apple®

Features:	Hayes Micromodem II™	Novation Apple Cat II™	SSM Apple ModemCard™
110/300 baud operation	Yes	Yes	Yes
Half/Full Duplex	Yes	Yes	Yes
Auto-Dial/Auto-Answer	Yes	Yes	Yes
Fits completely inside Apple	No	No	Yes
Operates without additional serial interface	Yes	Yes	Yes
Touch-Tone® Dialing	No	Yes	Yes
"Single-Modem-Chip" Reliability	No	No	Yes
Audio Monitor	No	No	Yes
Self Testing	Yes	Yes	Yes
Warranty period	2 yr	1 yr	2 yr
Suggested Retail Price	\$379	\$389	\$299

Trademarks: Micromodem: Hayes Microcomputer Products, Inc. Applecat II: Novation. ModemCard: SSM Microcomputer Products Inc. The Source: Source Telecomputing Corporation, a subsidiary of the Reader's Digest Association. Dow Jones News/Retrieval: Dow Jones & Company, Inc. Apple is a registered trademark of Apple Corporation.

Count the Yes-es. SSM's Apple ModemCard: the most advanced features for the least money. No external equipment required. All other modems are now obsolete.

And with SSM's Transend software, your Apple can send electronic mail or talk to other computers or information services such as the SourceSM and Dow Jones News/Retrieval®. (The ModemCard is also compatible with software for the Micro-modem II).

The SSM ModemCard: The only choice for choosy Apple owners. Available from your local computer dealer. Satisfaction is guaranteed. Or your money back.



SSM Microcomputer Products Inc.
2190 Paragon Drive, San Jose,
CA 95131 (408) 946-7400,
Telex: 171171 SSM SNJ

BRIGHT NEW UTILITIES

from
Avant-Garde Creations

The masters of
utility and
applications
software

HI-RES ARCHITECTURAL DESIGN

Design and print floor plan for rooms, complete buildings. 75 floor plan shapes are easily positioned. Lengths, diagonals, angles are calculated on screen.

\$29.95

HI-RES ELECTRONIC DESIGN

Create and print electronic circuit plans. 98 electronic components are easily moved and rotated.

\$29.95

SUPER SHAPE DRAW & ANIMATE

Fast and easy shape drawing and animation. Keyboard commands. New, revised version.

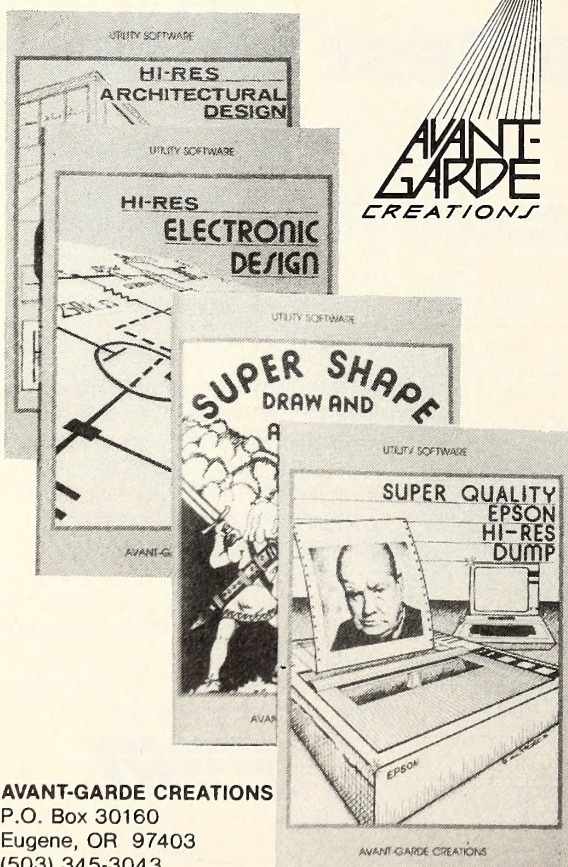
\$34.95

SUPER QUALITY EPSON HI-RES DUMP

Best quality Epson Dump features true black copy, no gray or streaks. Mirror, negative, flip or rotated images, three sizes.

\$25.00

Requires Apple II Plus 48K



AVANT-GARDE CREATIONS
P.O. Box 30160
Eugene, OR 97403
(503) 345-3043

an introduction to Pascal. The rest of the system, two disks and a user guide, is a lab kit for the book—a model of Karel that you can use to practice what you learn from the text.

The system allows you to create a world for Karel by placing walls and beepers at various locations on the grid. You can copy the problems in the book or create new ones. These world patterns can be saved on disk for use with various tasks and programs for Karel.

Then you assign Karel a task, such as, "Go and get the beeper on the corner of Sixth Street and Ninth Avenue and return without hitting any walls on the way"; and, finally, you write the program that will enable him to do that.

Then you run the program and see if it works. You can select the execution speed, run the program step by step (forward or backward), have the system explain what's happening at every step, or choose from various other options.

If your program doesn't work—leaving Karel off in left field somewhere, looking for nonexistent beepers—you can edit it and try again. Eventually, Karel will end up in the right place, having done all the right things—and you will have learned something.

This is a teaching device, not a game; after you've learned to write correct programs for Karel, there's not very much else you can do with him. But by that time you'll be ready for Pascal.

One final word: the user guide tells you that you must do several housekeeping tasks before you start—tasks with frightening names like "krunch the disk." This is not true; you don't have to do these things first. There is room on the disk as supplied to record a couple of short programs and experiment with them. After you've used that up, you'll be more familiar with the system and the housekeeping jobs won't look so awful.

Karel the Robot, by Richard E. Pattis, Cybertronics International, Software Publishing Division (999 Mount Kemble Avenue, Morristown, NJ 07960; 201-766-7681). \$242.

Wavy Navy. By Rodney McAuley. Do you suffer from seasickness? Does even the slightest sway of a car turn you a delicate shade of green? If you are an unfortunate sufferer of *mal de mer*, don't even attempt to look at this game, much less try to play it. However, if you feel like John Paul Jones this evening, and a swaying deck underfoot just races your adrenalin, then board the U.S.S. *Sirius* for a real challenge.

The ship appears to be fighting either in the Pacific during a typhoon or during a North Sea winter convoy run to Murmansk. The roughness of the sea is incredible. The waves are thirty feet tall! They ripple across the screen like sine waves, while you attempt to wage war against a fierce enemy air force.

The planes fly straight for a while, then become kamikaze fighters, diving straight at the ship. On higher levels the planes imitate Stuka dive bombers. The planes are well protected by squads of helicopter gunboats that fly down and spray very accurate machine gun fire. Long-range bombers periodically appear and saturate the air with bombs, which are difficult to avoid. After a few waves of attackers are destroyed, the enemy starts launching Exocet guided missiles. These missiles love to skim just the tops of each wave, forcing the ship down into the trough of the wave. That would not really be a hardship, except that it seems the storm also displaced some of the enemy's mine fields. These mines appear occasionally along the troughs of the waves, forcing the ship up to the wave's crest.

Imagine yourself, the skipper of the flagship, forced to perch on the side of a rolling wave with mines underneath and missiles overhead. While being divebombed and shot at by helicopters, you try to shoot down the whole air force. What should be your reward for succeeding against these unthinkable odds? *Wavy Navy* is certainly not chintzy when handing out promotions. A landlubber who survives all eight levels of the beginner mode can rise from galley slave to the rank of admiral. Old seadogs will want to try the expert mode, where the ultimate prize for completing the tenth level is the presidency. (Quick trivia question: Which United States presidents, if any, were naval heroes? Don't look now, but the answer's on page 2.)

As many as four players can participate in this rolling madhouse at one time. What a game to play on a Saturday afternoon with a group of friends and a keg of grog! However enjoyed, *Wavy Navy* is Sirius's best

arcade game in quite a while. Watch for it to rise fast in the charts. RRA *Wavy Navy*, by Rodney McAuley, Sirius Software (10364 Rockingham Drive, Sacramento, CA 95827; 916-366-1195). \$34.95.

List Handler. *List Handler's* main function is to manage large lists of information. Besides facilitating the retrieval of selected and sorted information, the program allows you to create customized form letters based on the content of a list file. *List Handler* can also exchange data with other programs that use DIF format or data exchange.

It's easy to use; the program manual provides step-by-step tutorials for each feature, and helpful on-screen menus identify the command options available at each step.

Powerful field-selector, logical-operator-selector, and sort-order operations are defined on-screen in readily understandable English. These operations use the arrow keys to page rapidly through the options. No previous knowledge of the logical operator is required, nor do you have to learn special logical symbols. In this sense *List Handler* comes close to the ideal of a "natural language" program.

List Handler is especially designed to work with the *Word Handler* word processing system; the program also works with text files created by a number of other word processing programs. To facilitate word processing, upper and lower case text in a seventy-column display is provided on a standard Apple II Plus without additional hardware.

List Handler is a flexible, fast, and powerful information-handling system. The program can handle three thousand records of four thousand characters in length each, with up to 255 fields within a record. In turn, each field can be 256 characters in length. If you've developed an extended list that requires two storage disks and you have two drives, both disks can be logged on at the same time. The program allows logging on of an extended list on multiple drives. Up to eight disk drives can be on-line simultaneously. And *List Handler* can perform such random multidisk sort at extremely high speeds.

The program does require a certain amount of initial organization. The manual does a good job of guiding the user through the labyrinth of procedures.

List Handler is a bargain, especially in view of the form letter capa-

bility and the large and flexible record and field sizes allowed. BDV *List Handler*, Silicon Valley Systems (1625 El Camino Real, Belmont, CA 94002; 415-593-4344). \$89.95.

Demon's Forge. By Brian Fargo. The king's infamous dungeon maze, the *Demon's Forge*, is open for adventurers, but it seems the king was not pleased when someone got drunk and killed four of his guards. Ancient rumor hints at an exit from this evil place, but no one in living memory has verified it. Most of those unfortunate enough to be cast down here become a snack for the keeper of the dungeon, the demon Anarakull.

Clothes and weapons are not part of your dungeon tour package. The king was gracious enough to allow a small packet of rations. The first level of the dungeon seems deceptively easy. You only need to watch out where you put your hands!

The entire maze is diabolically laid out in modules. When you finally solve the entrance to the next module and exit the old one, you find that it's a one-way trip. If you haven't brought along all the correct items, there's no way back to get them. Luckily the game has a built-in multiple game save feature. The cautious adventurer always saves a game before venturing into the next module.

Most items in this dungeon either are not what they seem or have extraordinary characteristics. Beware of the killer rabbits on loan from *Monty Python* and the *Holy Grail*. Illusion reigns supreme and everything should be examined, pushed, or prodded. But be careful!

The hi-res graphics are good and some of the effects are quite interesting. The parser, however, is not very forgiving. The player must use the exact word or phrase to achieve a desired effect. In some cases the phrase required seems needlessly obscure.

Demon's Forge is a good first effort by a new software house. It is highly recommended to the intermediate level adventurer. Persistent novices may also be able to complete the hazardous journey. RRA

Demon's Forge, by Brian Fargo, Saber Software (8 Winged Foot Lane, Newport Beach, CA 92660; 714-644-0977). \$39.95.

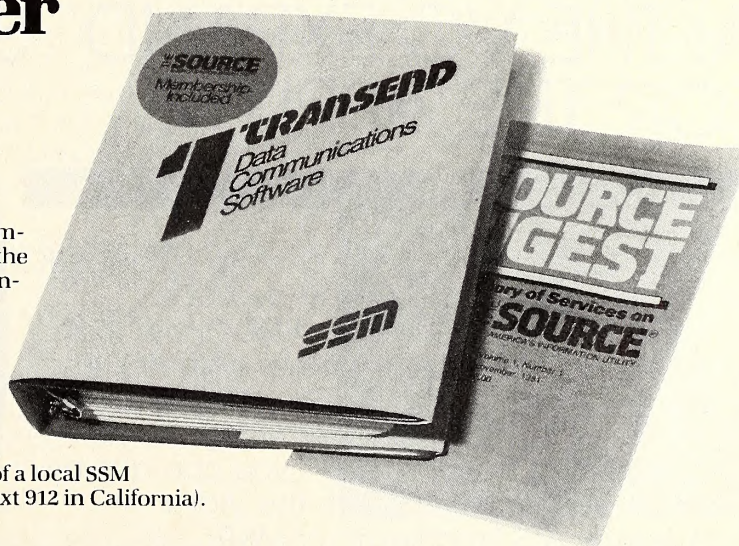
The Stamp Collector. By Dick Stein. With microcomputers becoming increasingly popular for small business and home management use as

AppleTM users: Buy Transend 1TM for only \$89. And get a valuable subscription offer from THE SOURCE.SM

For just \$89, Transend 1 software can make your Apple communicate with any computer or information service over the telephone lines. And, for a limited time, you can take advantage of a valuable subscription offer from THE SOURCE, AMERICA'S INFORMATION UTILITYSM—your connection to up-to-the-minute business and UPI news; stock prices; information and shopping services—virtually unlimited uses.

Right now, SSM's complete line of Transend communication software includes this subscription offer. For details, ask your local dealer about Transend. For the name of a local SSM dealer, please call: 800-227-2400, ext 912 (or 800-772-2666, ext 912 in California).

Offer expires June 30, 1983.



Apple is a trademark of Apple Computer, Inc. Transend is a trademark of SSM Microcomputer Products, Inc. THE SOURCE and AMERICA'S INFORMATION UTILITY is a servicemark of Source Telecomputing Corporation, a subsidiary of The Reader's Digest Association, Inc.



Transend it.
SSM Microcomputer Products Inc.
2190 Paragon Drive, San Jose, CA 95131

well as for entertainment, it was inevitable that programs aimed at the philatelist would begin appearing.

Described by its publishers as "A powerful database program [which] consists of six programs," *The Stamp Collector* disk does contain a very general database management program and a file transfer utility for sorting and copying. The other four "programs" are merely examples (Foreign Stamp List, Domestic Stamp List, Meeting List, Sources List) of files that one could construct from the DBM program. With a fair amount of patience and no knowledge of computer programming per se, you could construct similar files for books, cars, baseball scores, telephone numbers, or scientific names for fish! Andent (a dental corporation, actually) also markets what appears to be the identical DBM program with numismatic examples as *The Coin Collector Catalog*.

Adapting *The Stamp Collector* to philately is a task that still rests squarely on the shoulders of the user. The DBM program permits you to assign, within generous limits, characteristics under which you wish to classify any stamp or cover (or fish, birthday, or recipe, for that matter). For example, the country of origin could be one such heading, although it might be better to create a separate file for each country to avoid having to key in the name for each item. Then you might want the catalog number, condition, value, price paid, date of purchase, source, or storage location. Figuratively speaking, the program provides you with the pencil and paper; you must decide what you wish to write. Whether anyone could devise a universal data system for stamp collectors is debatable, but certainly Andent has not.

Report generation, the typical end product of these files, requires some experimenting by the user to develop a suitable format. The instructions are unclear and don't always agree in detail with the disk.

Some of the format generation questions refer to information that is no longer on the monitor screen, having been scrolled off by the previous questions. Some questions are answered by depressing a single key; others require a key plus return; the user has no advance clue.

The use of "default responses" (answers requiring only the use of the

return key), augmented by reverse field and/or flashing characters, would greatly improve user interaction with the keyboard. Too many questions lead to a possible dead end, with no means of backing out. At one point we're allowed to choose between creating a new report format or deleting an existing one, but there is no explanation in the manual or on the monitor screen as to how the existing format is to be identified, and there is no parachute by which to escape should we wish to take neither action. Instead of making a graceful exit, we must reset and start the format generating process all over from scratch.

Finally, the choice of a suitable printer is somewhat less than infinite. The program claims to be selectable between the IDS 440 Paper Tiger, the Epson MX-80, and the Centronics 737/739. However, when the Centronics option is used, the program acknowledges that you have just chosen the Epson! Bias? No, just a point of sloppy programming. Perhaps the Centronics would work somehow; the Apple Silentype does, with sufficient care in configuring the format, although it isn't given as an option.

These various shortcomings aren't unique to Andent or author Dick Stein. They're far too common in the mushrooming software industry; users are still too often left wishing that more attention would be given to the creation of "friendly" software—understandable, useful, and free of boobytraps.

This program is not a panacea for philatelists. It might be a reasonable acquisition for the DBM user with more than minimal skill or patience.

RSW

The Stamp Collector, by Dick Stein, Andent (1000 North Avenue, Waukegan, IL 60085; 312-223-5077). \$49.

Beneath Apple Manor. By Don Worth. Along about the time that Tandy was asking the world if its children were worth six hundred dollars apiece and a few noncomputer people were poking around to see what all the foofaraw was about, asking wasn't there something better, and finding the Apple II, a very computer person wrote a very fun program for and in honor of that very Apple II. The program was called *Beneath Apple Manor*, and it was the first real attempt at a graphic D&D

Q: WHAT HAS 80 COLUMNS, 176K AND WORKS WITH VISICALC®

A: THE VC-EXPAND™ SYSTEM FOR THE APPLE II®

Using VC-EXPAND™ and one or more Saturn 32K, 64K or 128K boards, VisiCalc's® available workspace is increased up to 176K (more than just the 145K available with other systems). And, unlike other systems, the ENTIRE workspace can be saved on multiple diskettes. Using VC-EXPAND/80™ and VC/80™ you can display VisiCalc® in 80 columns with the Videx Videoterm®, ALS Smarterm® or M&R Sup'RTerm®. Disk emulation and other software is included with the RAM boards.

DEALER INQUIRIES INVITED
VISA AND MASTERCARD ACCEPTED

APPLE II IS A REGISTERED TRADEMARK OF APPLE COMPUTER, INC.
VISICALC IS A REGISTERED TRADEMARK OF VISICORP.



**ALPHA LOGIC
BUSINESS SYSTEMS, INC.**
4119 NORTH UNION ROAD, WOODSTOCK, IL 60098
(815) 568-5166



It's 2 AM. Your Apple II is sending budgets to New York; purchase orders to Boston; a contract to St. Louis; and correspondence to every field rep in the country. Automatically. Transend, from SSM.

Transend software opens the world of electronic communications to your Apple. From sending mail over the phone to connecting with information banks—the doors opened by Transend are practically unlimited.

Take electronic mail. SSM's Transend 3 lets your Apple correspond *automatically* over phone lines with *up to 100 Apples*—at any hour you choose. Your Apple dials each phone number, transfers data electronically, verifies that the data was transmitted intact, and provides a complete call status report. Transend 3's password feature means only authorized users see sensitive information.

8:37 AM. Your Apple receives mid-morning sales reports from the Apple in your New York office.

Transend 2 lets your Apple correspond over the phone with other Apples. Error detection features guarantee the accurate transmission of your valuable data.

1:52 PM. Your Apple displays current flight schedules and connects you to a ticket agent via **THE SOURCESM**.

SSM's Transend 1 turns your Apple into an intelligent terminal connected to your corporate computer, a timeshare system, or any

information service such as **THE SOURCE**. (In fact, all Transend software includes a valuable subscription offer for **THE SOURCE**.)

You'll get business news, the most recent stock reports, advance UPI world news—even flight schedules—in moments. And new possibilities arise constantly.

11:53 PM. With the SSM **Apple ModemCardTM**, your Apple is always ready to dial the phone.

SSM's 300 baud modem card fits conveniently inside your Apple. Advanced features include Auto-dial/Auto-answer for unattended operation, and Touch-ToneTM dialing (required for networks such as Sprint[®] or MCI AdvantageTM). The SSM ModemCard makes all other modems obsolete.

2 AM. The SSM **Apple TimeCardTM** lets your Apple work while you sleep.

The SSM Apple TimeCard lets your Apple Transend mail automatically at any hour. It keeps accurate time for other uses as well.

Need help?

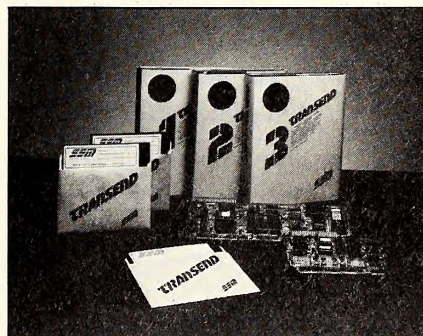
Simply Transend your question to SSM's 24-hour electronic message board. The next business day, your answer will appear on the board for easy reference.

"How do I Transend my Apple?"

Easily. Just go to your dealer for a flexible choice of SSM products. You can purchase easy-to-use, pre-packaged hardware/software combinations, or separate components to fit your needs and budget. SSM guarantees your satisfaction or your money back.

SSM Microcomputer Products Inc.
2190 Paragon Drive, San Jose,
CA 95131 (408) 946-7400,
Telex: 171171 SSM SNJ

The Transend family from SSM: Transend 1 (intelligent terminal software that lets your Apple talk to virtually any computer, including information services), Transend 2 (software that lets your Apple send verified electronic mail to other Apples), Transend 3 (full-featured electronic mail software with automatic mailing capabilities), the SSM Apple TimeCard, and the SSM Apple ModemCard.



SSM

Transend it.

Apple and Apple II are registered trademarks of Apple Computer, Inc. Transend, ModemCard and TimeCard are trademarks of SSM Microcomputer Products, Inc. THE SOURCE is a service mark of Source Telecomputing Corporation, a subsidiary of The Reader's Digest Association, Inc. Touch-Tone is a trademark of American Telephone & Telegraph. Sprint is a registered trademark of Southern Pacific Communications Co., a Southern Pacific subsidiary. MCI Advantage is a trademark of MCI Telecommunications Corporation.

WHEN THE NAME SAYS HAYDEN,



GO
Cat. No. 21109
Apple II Disk \$34.95
Cat. No. 21112
Atari Tape \$29.95

**INTRODUCING
THE GAME WITH TWO
THOUSAND YEARS OF CHALLENGE.
AND
THE GAME THAT PITS YOU
AGAINST A DEADLY WOLF PACK.**

"Go" was invented many centuries ago in the mysterious Orient. And now Hayden translates it for your computer, with maddeningly addictive results. It's a deceptively easy game, one you can play against the smartest person you know or against your own computer. And who knows? Maybe in a thousand years or so you'll master it.

"Wargle," on the other hand, is a very modern affair, involving attacks on you by a pack of vicious wolves. Outshoot them and they merely regroup and come at you with greater ferocity. Just when you think you're getting good at this game, you'll find yourself at a new, more dangerous level.

"Go" and "Wargle" couldn't be more different from each other—but they couldn't be more fun. And that's the way Hayden designs games: to be captivating, engrossing, challenging and (above all) totally enjoyable. Want to have more fun with your computer? Easy. Play more Hayden games.

WARGLE
Cat. No. 20909
Apple II Disk \$34.95

WARGLE



THE GAME SAYS "PLAY ME!"

GAMES FOR WHEN YOU CRAVE ACTION



KAMIKAZE - Danger at sea and in the air

Catalog No. 13809, Apple II Disk, \$34.95

SHUTTLE INTERCEPT - Accelerating excitement in a rescue in space

Catalog No. 19009, Apple II Disk, \$34.95

LASER BOUNCE - Attack with your beams

Catalog No. 19209, Apple II Disk, \$34.95

BELLHOP - Silliest, fastest-moving up-and-down game

Catalog No. 19109, Apple II Disk, \$34.95

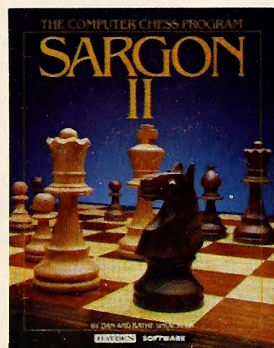
WARGLE - The wolf pack is on the loose

Part No. 20909, Apple II Disk, \$34.95

BULLDOG PINBALL - Every bounce of arcade pinball

Catalog No. 19312, Atari 400 or 800 Tape, \$29.95

GAMES FOR WHEN YOUR BRAIN NEEDS A WORKOUT



SARGON II - The acknowledged chess classic

Part No. 034XX: Apple II, Disk and Tape; TRS80 I or III, Disk and Tape; PET, Disk and Tape; Atari, Disk and Tape 8" CP/M Disk Tape, \$29.95, 5" Disk, \$34.95; 8" Disk, \$39.95

REVERSAL - Easy to play, impossible to master

Part No. 07009, Apple II Disk, \$34.95 Part No. 07012, Atari Tape, \$29.95

GO - Ancient game wins new friends

Part No. 21109, Apple II Disk, \$34.95 Part No. 21112, Atari Tape, \$29.95

FINAL CONFLICT - Choose your battlefield, choose your battle

Catalog No. 13609, Apple II Disk, \$34.95

CHAMPIONSHIP GOLF - A test of skill, even if your name's Arnie

Part No. 11809, Apple II Disk, \$24.95

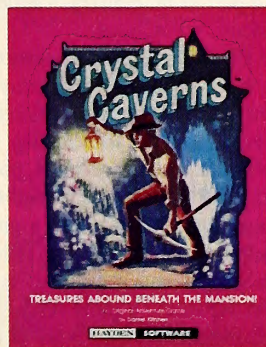
KING CRIBBAGE - New life for a grand old game

Part No. 11509, Apple II Disk, \$24.95

TETRAD - Four-dimensional tic-tac-toe—no kid stuff

Part No. 09809, Apple II Disk, \$24.95

GAMES FOR WHEN YOU WISH YOU WERE SOMEBODY ELSE



CRIMESTOPPER - Be a private eye in a dangerous city

Catalog No. 19509, Apple II Disk, \$34.95

CRYSTAL CAVERNS - Search for hidden treasure

Catalog No. 19409, Apple II Disk, \$34.95

MICROSCOPIC JOURNEY - Explore the human body—from inside

Part No. 22609, Apple II Disk, \$34.95

STAR TRADERS - Enter the world of intergalactic profiteering

Part No. 10709, Apple II Disk, \$24.95

ALIBI - Solve Col. Farrington's murder with your keen mind

Part No. 10909, Apple II Disk, \$24.95

KLONDIKE 2000 - Discover gold—and danger—on Mars

Part No. 10209, Apple II Disk, \$24.95

And look
for new games
at your
Hayden Software
dealer

HAYDEN SOFTWARE

Available from your local dealer, or call:

1-800-343-1218
(in MA, call 617-937-0200)

Hayden

for the microcomputer.

The original *BAM* still graces the Fastalk column—as a classic. In speed, graphic resolution, and sophistication, it was outdated long ago. Yet its appeal remained and owners of the old program continued to pull it out and give it a play every now and then.

Don Worth and his since-*BAM* affiliation, Quality Software, got the picture. And, as soon as he had the time (a rare quantity for a college professor and businessman), he rewrote *BAM* in hi-res with Applesoft compatibility (the old and new both use machine language, but the old drivers were Integer), sped it up, and added all the bells and whistles—like a save game function—that today's game players like.

He also added a few treasures and fancied up the ending. And there, in his wisdom, he stopped. The old game, with all its super features, remains exactly the same.

Beneath Apple Manor is, in this time of gaming complexity, an exercise in simplicity. Explore the dungeons, fight the monsters, build your character, go deeper, and do it all over again.

But simplicity can be another way of saying elegance. Consider that every dungeon level is generated randomly, every one is one you've never seen before. And you won't see it at all until you explore it, bit by bit. Then, of course, unless you take the memory wipe-out potion, all that you've explored stays on the screen so that you can see the whole thing eventually. Exploring and discovering each maze is a lot of the intrigue of *BAM*; what will the next dungeon look like?

There are tradeoffs. In hi-res, you're limited to five rooms per dungeon; if you choose more (up to ten are allowed), you play in text-res. And one of the new treasures is a potion that reveals the whole level you're on. That's undoubtedly supposed to be a boon, but this reviewer won't chance taking that one again.

The strategy remains, and there's plenty of it. Few *BAM* players haven't a clear-cut strategy they'll recommend above all others. Experience points are tradable for character points in any of a relatively stan-

dard four areas—strength, intelligence, dexterity, and body (constitution). Because new levels are populated on the basis of your average and because monsters vary in how they affect you and in what affects them and in which levels they tend to cluster, where you put your points at various times during the game is very strategic.

Its eternal newness renders *Beneath Apple Manor* addictive. Even after you once reach the bottom of the dungeon and walk away with the prized golden apple, the challenge of doing it again at a higher level of difficulty—there are ten—remains. Some fans of the early *BAM* have changed the rules to keep playing; they never take the golden apple when it's offered. Their goal is to see how much of a superhero they can build. Since the dungeons keep getting harder to match your strength, the challenge continues.

BAM doesn't have the complexity of a *Wizardry* or a *Temple of Apshai*. But it remains a light, interesting, thoroughly enjoyable game with a wide enough range of play levels to be fun for very small children and to challenge veteran adult players.*

Beneath Apple Manor, by Don Worth, Quality Software (6660 Reseda Boulevard, Suite 105, Reseda, CA 91335; 213-344-6599). \$29.95.

Madame Shepp's Tarot. By Madame Shepp. Madame Shepp has done an excellent job of adapting traditional tarot readings to the microcomputer. Her readings are based on the Rider-Waite tarot deck and every attempt is made to individualize each reading.

As the seeker after cosmic truth, you can choose between two styles of divination: the traditional Celtic Cross reading or a simple yes or no answer. Ask your question and choose which significator card best represents your aura. Then the deck is shuffled. Cut the cards while Madame Shepp's Psychic Computer absorbs your energy into the deck.

When a simple yes or no answer is requested, seven cards are laid out. Three cards describing the past, one the present, and three the future are shown, with detailed information given about each card. Then the cards are weighed together to arrive at a final determination.

If an in-depth reading is desired, then the ancient Celtic Cross method is used. Ten cards are dealt, each card symbolizing a very specialized area. The meaning of each of these areas is revealed, based on the nature of the card, whether it is upright or reversed, and whether it belongs to the Major or Minor Arcana. An entire screen full of analysis is shown, summarizing the forces involved, and then an overall prediction is given. If more analysis is desired, the last card of the reading can be used as the foundation for a whole new reading. This is equivalent to switching to 10x power on a pair of binoculars. Vague shapes can suddenly jump into crystal clear focus.

At the end of either style of divination, the seeker may make a hard copy printout of the reading for further reflection and reference.

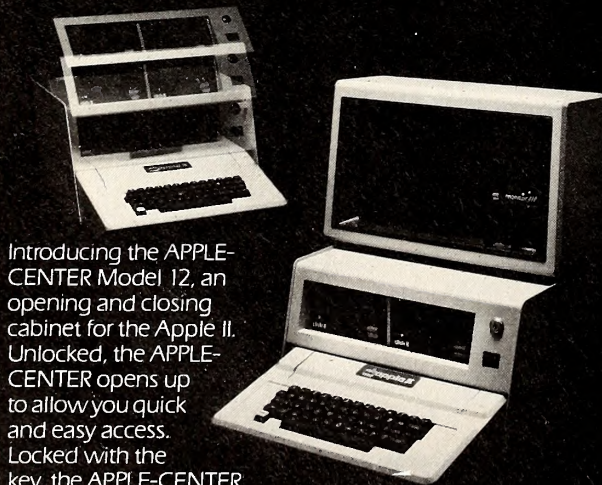
Unfortunately, all the cards in the readings are shown only in lo-res. While it certainly enhances the reading to see the cards in their proper positions on the table, adding hi-res pictures, especially of the Major Arcana, would do much to heighten the experience.

This program is not designed as a game, but as a serious attempt to provide computerized tarot readings. However, *Madame Shepp's Tarot* is refreshingly delightful and intriguing, even for nonbelievers. The computer will never replace the tarot reader completely, because a machine lacks the ability to empathize fully with the seeker. If voice synthesis were added to this program, the effect would certainly be eerie. Imagine Orson Welles or Christopher Lee intoning your reading. You'd be on the edge of your seat the entire time.

As a test of the program's ability, the question was asked: "What is the future of this program in the market?" The resulting Celtic Cross reading was a fascinating analysis of the trials and tribulations of getting a computer program written and published. The program confidently

*One question remains. When a classic is redressed to give it more modern advantages yet retains all the attributes that made it eligible to be a classic in the first place, which should appear in Fastalk as the classic? The potential customer would do best to buy the later version; the collector should seek the early one. *Prisoner* and *Prisoner 2* present the same problem as *BAM*. What do you think? Send us your opinion, with your reasons, and if you're the best arguer for your point of view we'll send you one of each of these two programs—in the version you argued for. Mail your entry to Softalk Classics, Box 60, North Hollywood, CA 91603, by March 15, 1983.

PROTECTING YOUR APPLE... AN OPEN AND SHUT CASE



Introducing the APPLE-CENTER Model 12, an opening and closing cabinet for the Apple II. Unlocked, the APPLE-CENTER opens up to allow you quick and easy access. Locked with the key, the APPLE-CENTER shuts tight to protect your

Apple and 2 disk drives. The key also switches power to your Apple and your monitor. Both outlets are protected from damaging voltage surges with RKS Industries' SURGE SENTRY. We've even built in a filtered cooling fan. Model 10 comes without electronics and is compatible with side mounted fans.

apple center

Call or write for additional information:

DOSS INDUSTRIES

1224 Mariposa, San Francisco, CA 94107 (415) 861-2223

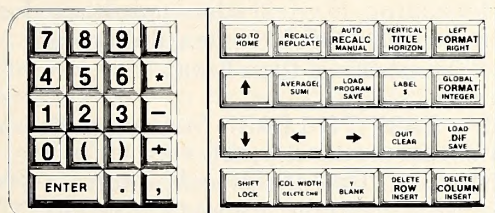
Apple is a registered trade mark of Apple Computer, Inc.

keywiz™ is

**A VISICALC* FUNCTION KEYPAD
A WORD PROCESSING KEYPAD
A NUMERIC KEYPAD**

NEW

keywiz™



* Also Works for Magicalc
on the Apple II or Ace.

APPLE II +

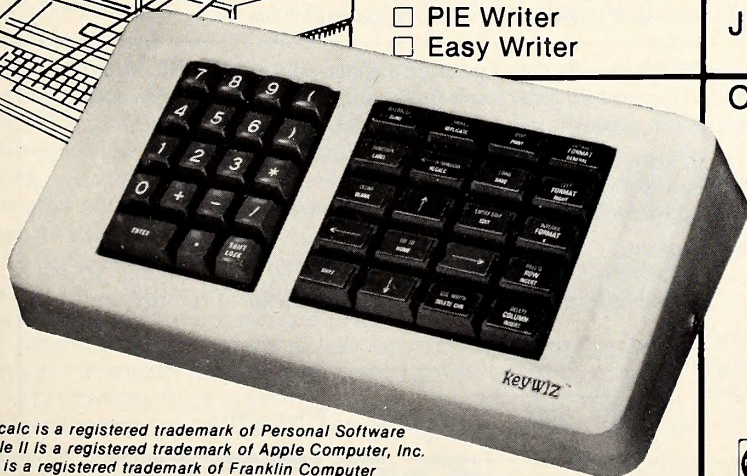
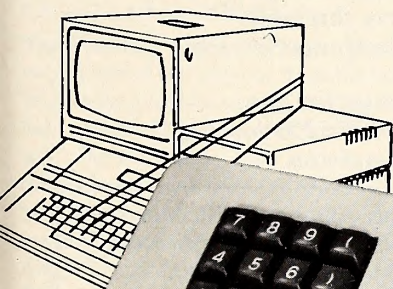
**VISICALC* KEYPAD
WITH NUMERIC KEYPAD**

\$299.00

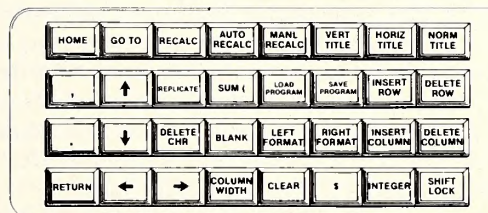
**VISICALC* KEYPAD
NUMERIC KEYPAD
W/OPTIONAL
WORD PROCESSOR**

\$339.00

- Pick 1
- ☐ Applewriter II
 - ☐ Screenwriter II
 - ☐ Super Text
 - ☐ Magic Window
 - ☐ Word Star
 - ☐ Executive Secretary
 - ☐ SVS Word Handler
 - ☐ PIE Writer
 - ☐ Easy Writer



keywiz™ CONVERTIBLE™



**APPLE II + OR ACE
VISICALC KEYPAD AND
YOUR FAVORITE
WORD PROCESSOR**

\$299.00

Pick 1

- ☐ Applewriter II
- ☐ Screenwriter II
- ☐ Super Text
- ☐ Magic Window
- ☐ Word Star
- ☐ Executive Secretary
- ☐ SVS Word Handler
- ☐ PIE Writer
- ☐ Easy Writer

And More Coming

**ALSO... PLUG IN MODULES*
FOR YOUR KEYWIZ CONVERTIBLE
to Redesignate the keys for:**

**PASCAL \$40.00
BASIC \$40.00**

MANY OTHERS call for information

Just plug them in - Includes template overlay.

ORDER NOW

STANDARD KEYWIZ Apple II +

- ☐ Visicalc Keypad w/numeric Keypad \$299.00
- ☐ With Optional Word Processor \$339.00

KEYWIZ CONVERTIBLE Apple II or Ace

- ☐ Keywiz Convertible for Visicalc*
(w/o numeric keypad) with Word Processor \$299.00

ADDITIONAL MODULES \$40.00 Each



Add \$8.00 for Shipping and Handling



Patent Pending

*Visicalc is a registered trademark of Personal Software
*Apple II is a registered trademark of Apple Computer, Inc.
*Ace is a registered trademark of Franklin Computer

Call:

**CREATIVE COMPUTERS • Aztec Environmental Center • 1044 Lacey Road • Forked River, N.J. 08731
(609) 693-0002**

TRACK THE SPACE SHUTTLE ON AN APPLE? YES. WITH MICROSPEED!

At the Jet Propulsion Laboratory in Pasadena, NASA scientists have discovered the power of MicroSPEED. Using this remarkable hardware/software system with an Apple II, they produced a continuous graphic display of the Columbia's position relative to the earth during the second Shuttle mission. This enabled the JPL team to accurately follow the spacecraft in *real time*, and to precisely control its powerful sensors at critical points along the flight path. Surprised that such a demanding project is possible on the Apple? So were JPL's engineers, and many others who have discovered . . .

THE MICROSPEED DIFFERENCE This extraordinary Language System exploits the real potential of the microcomputer for the first time. The difference between MicroSPEED and other programming languages is that with MicroSPEED, there is virtually *no limit* to what you can achieve. It may well be the ultimate language for the Apple II and III (and soon the IBM Personal Computer). MicroSPEED literally combines the performance of a *minicomputer* with an

exhaustive set of user-friendly capabilities: hardware math processing, fast hi-res graphics and text, turtle graphics, print formatting, two text editors, unlimited data types, and incredible FORTH extensibility—all at speeds up to 100 times faster than Basic.

USER-FRIENDLY, EASY-TO-LEARN Starting with simple commands that are comfortable even for non-programmers, MicroSPEED extends and builds, allowing you to create your own tailored application languages. The capability of your computer will grow exponentially, as you work in an active partnership with the machine, exploring and developing new problem-solving facilities—creating, correcting, refining your increasingly powerful system.

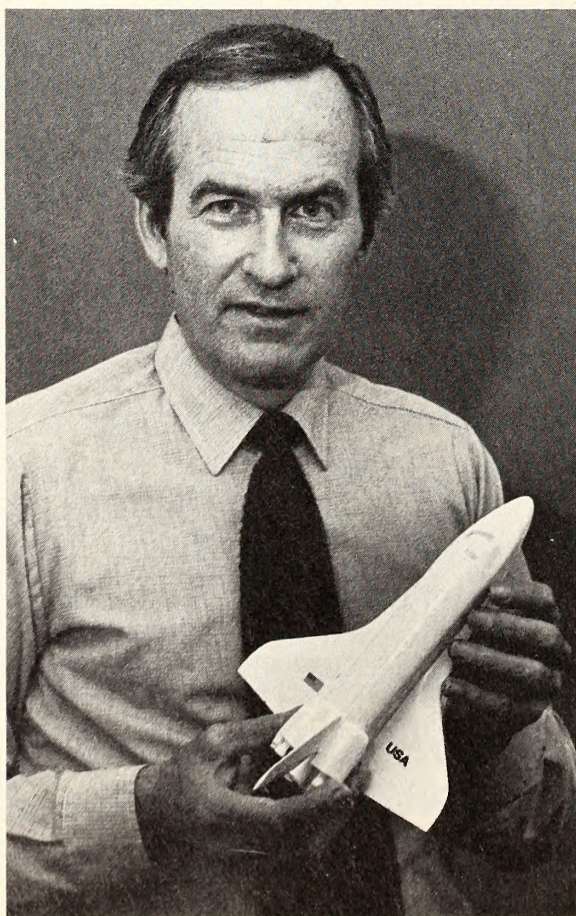
DEMANDING JOBS AT LOW COST MicroSPEED has been put to the test in fields as diverse as medicine, the stock market, oceanography, and the arts. In even the most challenging applications, MicroSPEED users have been unanimous in their praise of the System and manual. Typical comments are:

"... we are more than pleased with MicroSPEED... I can't imagine using BASIC on any future applications."
Roger Guevremont, National Research Council of Canada.

"I continue to marvel at its versatility and power."
Carl R. Schramm, USCG Base, Kodiak, Alaska.

"An excellent package... No other language than MicroSPEED... could perform this well."
David Whittington, Boeing Computer Services.

"If you plan to use a personal computer for any demanding task, then we built MicroSPEED for you."
Sam Cottrell, President of Applied Analytics.



MicroSPEED requires the Apple Computer with single disk. MicroSPEED II includes 2 MHz math processor. MicroSPEED II + includes 4 MHz math processor.

Applied Analytics Incorporated
8235 Penn-Randall Place
Upper Marlboro, Maryland 20772 (301) 420-0700

Please send me:

_____ MicroSPEED II, \$495.00 _____ 160 Page Manual, \$15.00
_____ MicroSPEED II +, \$645.00 _____ Detailed Information

Name: _____

Company: _____

Address: _____

City _____ State _____ Zip _____ Phone No. () _____

MICROSPEED™
APPLE IS A TRADEMARK OF APPLE COMPUTER, INC.

predicted success for itself in the future! It's all in the cards. **RRA**
Madame Shepp's Tarot, by Madame Shepp, G.Y.S.T. (540 Midvale Way, Mill Valley, CA 94941; 415-383-8438). \$37.50.

Ice Demons. By Matthew Jew. High in the frozen wastes of the mythological Norse polar regions, an eternal battle is being waged. Ice demons are rampaging against humanity, and only you can hope to stop these hideously deformed creatures.

Hidden in great caverns beneath the frozen ice packs they lurk, waiting to burrow up and emerge to surround and destroy you.

Each creature has been endowed with magical powers by the evil High Master himself. Slime fires devastating paralysis arrows that relentlessly follow anywhere you run. Plebe can magically transport himself anywhere on the screen instantly. The deadly Willowwisp, whose breath blows icy death, is nearly impossible to vanquish; and Widowmaker moves with lightning speed. All the demons have an icy touch that means instant death.

Into this frozen hell you must travel, deeper and deeper, clearing level after level, in search of the mighty High Master, deadly leader of the ice demons. Only with his destruction may the world become a safe place again.

Armed only with bow and arrow, your task is supported by two magical aids sent periodically by the Great Wizard: a giant magic arrow that helps you to fire faster and a transporter that advances you a level—if you can survive to reach it. Further assistance comes with the magic dollar; grab one and gain bonus points, fire at one and it breaks apart into dozens of arrows deadly to the ice demons.

Ice Demons is an arcade game that's definitely different. At boot-up, the cast of characters is introduced to the accompaniment of Bach's Toccata and Fugue in D Minor. Then the demons begin emerging from icy covered holes that appear randomly on each level. Well defined and distinctive, the demons immediately move toward the hero.

Ice Demons features a unique two-player mode; you can choose either of two configurations—one for people who want to compete and another for those who'd rather gang up on the demons. In both, the players play at the same time (as opposed to taking turns). In team mode, players' arrows cannot hurt the other player and both players may use the transporter. In competition mode, players score for hitting each other, and only one player may use the transporter on a level.

Although marred by poor animation, rather boring sound effects, and occasional image flicker, the inventive quality of the concept plus its totally unique modes of play make *Ice Demons* a significant game and Morningstar a company to watch. **HAS**

Ice Demons, by Matthew Jew, Morningstar (39 Florence Street, San Francisco, CA 94133; 415-441-2535). \$29.95.

The Planetary Guide. By Kevin Bagley and David Kampschafer. About two-thirds of the way out from the hub of a galaxy known as the Milky Way exists a solar system containing Earth and eight other planets, all revolving happily around the Sun. A bestseller for some time in Andromeda, *The Planetary Guide* is now available to intelligent occupants of these nine planets.

The program provides graphic images of each of the planets, showing their general appearance, tables of statistics about each, and descriptive information about them. Looking at the planets as a system, *The Planetary Guide* extracts relative size, comparative orbits, phases of the moon, and movement of comets around the sun. It even gives a hi-res illustration of the motion of the planets around the sun on any given date from 1 A.D. to far into the future.

After using this program you can expect to be able to locate and identify the planets in the night sky. All planets are visible to the naked eye except Uranus, Neptune, and Pluto.

Documentation includes a glossary and additional information describing the ecliptic, phases of the moon, and retrograde motion.

The Planetary Guide is a well put together program that presents the interrelationships of the bodies in our solar system in a clear and easily accessible manner. **DAD**

The Planetary Guide, by Kevin Bagley and David Kampschafer, Synergistic Software (830 North Riverside Drive, Renton, WA 98055; 206-226-3216). \$30.

The Desecration. By Greg and Gil. Somehow this program suggests the Reese's Peanut Butter Cup advertisement: "You got adventure in my ar-

cade!" "You got arcade in my adventure!" *The Desecration* is the beginning of a new breed of game, the Adventurecade. The game is basically a hi-res adventure, but at three different points in the game the player must demonstrate sufficient prowess at arcade skills to proceed.

This game is the first in a series of science-fiction Adventurecades featuring the player as an intergalactic assassin. It is a good introduction; the puzzles are generally not difficult and the arcade action is not too demanding.

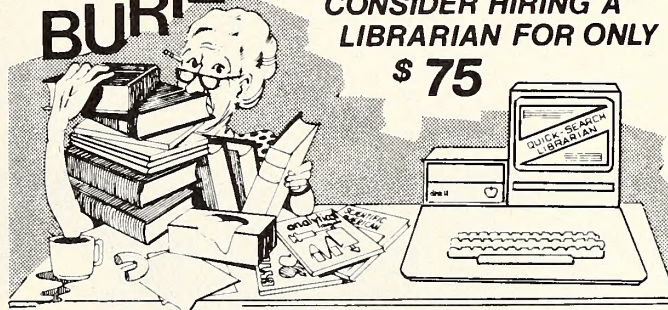
The plot of *The Desecration* revolves around your assignment to penetrate the tight defenses of the mining community Pyrkon 9, and to assassinate its tyrant chairman, Dunmark Pykro. Keemar, Guildmaster of Assassins, gives you the assignment personally. He informs you that this is a contract paid for by a joint venture of other rulers, who fear Pykro's expansion plans. They are willing to pay your standard fee of ten thousand galactic sovereigns. You may also keep anything you find, subject to guild approval, of course. Keemar then gives you a special password needed to make contact on Pyrkon and wishes you luck.

Along the way to the planet, you must steal a spaceship, break out of prison, and deal with weird aliens and spies. Once on the planet, the adventure gets tougher. The game is rarely boring and maintains a good level of excitement and suspense. The parser is somewhat awkward; at times, strange phrasing is needed to proceed, although the puzzles are all very logical and sometimes even too straightforward.

The arcade segments offer nothing new in arcade games, but they present the average adventurer with quite a problem. Not only must you master the pace of each game, but you must survive two levels to each part of each game. You must therefore become good at the arcade games, not just passable. Arcade fans will flash through these segments, but bog down in the traditional adventure segments. This could be a good game for two-player teamwork. **RRA**

The Desecration, by Greg and Gil, Mind Games (420 South Beverly Drive, Suite 207, Beverly Hills, CA 90212; 213-277-8044). \$49.95. **■**

BURIED IN STACKS OF ARTICLES? CONSIDER HIRING A LIBRARIAN FOR ONLY \$ 75



Quick Search Librarian (QSL) makes it easy to enter and edit your journal references, search for articles, and print or sort a list of articles using the 48K APPLE* II+ computer. Important QSL features include:

- Two keystrokes select any one of 255 keywords or any one of 255 journal titles.
- Four lines available for listing authors, title and/or comments.
- Powerful data base screen editing, copying and merging features.
- Average search speed is 50 articles/second with multiple criteria; average sorting speed is 40 articles/second when sorting on 3 fields.
- Typically, 1000 articles can be stored on a single disk.
- Includes sample data base and tutorial for *Scientific American*, 1981.

VISA or Mastercard orders accepted. QSL manual available separately for \$5. (Price of manual deductible later with purchase of QSL software.) Add \$1.50 for shipments made in U.S.A.

* Trademark of Apple Computer, Inc.



INTERACTIVE MICROWARE, INC.

P.O. Box 771, Dept. 2

State College, PA 16801, (814) 238-8294

THE DIFFERENCE

from page 127

word processing set and *MagiCalc* for the number crunchers. *Magic Window IIe*, in its original form the first word processor to offer eighty columns without a hardware enhancement, has considerably speeded up display by using the Apple board.

MagiCalc, as with *VisiCalc*, *Multiplan*, and *Incredible Jack*, will use all 128K of a full machine. It'll even grab up to 512K if you provide the RAM boards and sufficient data.

Software Publishing Corporation, with its PFS series, illustrates another facet of the marketplace. Because they write code in Pascal, they find it easier to bring their programs to a new marketplace. *PFS: File* remains the bestselling filing program on the Apple II Plus and the Apple III. Its immediate availability on the IIe is another competitive point in the machine's favor.

Sirius Software's products all worked on the IIe without modification with two exceptions. Sirius modified *Wayout* to provide gameplayers with a better keyboard layout.

Sirius also immediately modified their highly successful *Type Attack* program to teach placement of the keys on the IIe keyboard. Ernie Brock, a product manager at Sirius as well as coauthor of *Type Attack*, feels the new version will be handy for veteran Apple users trying to make the changeover.

But even as the preceding companies joined Apple at the unveiling announcement, other companies were moving as rapidly. Lightning Software gave proof of their name by having a IIe version of *MasterType*. The version includes the additional keys and uses the extra memory to speed up the pauses between lessons.

Continental Software proved especially opportunistic. Of course, they announced a IIe version of their bestselling *Home Accountant*. The surprise was the announcement that *The Tax Advantage*, a program not then in general release for the II Plus, was also ready for the IIe.

That's an impressive list of solid software companies. With the commitment of Sirius, Sierra On-Line, and Broderbund to make their product compatible with the IIe, it means almost all the bestselling entertainment software will be available to new owners. In addition, the first and

second ranked business programs, the first ranked educational program, the first ranked home program, and the first ranked word processor were already available before the machine was ever put in the market.

That's an impressive feat, quite unparalleled in the short history of microcomputing; and that litany ignores the two contributions from Apple itself, which has not exactly been idle. *Apple Writer* is generally the second or third ranked word processor. In its IIe incarnation, it takes advantage of every new feature. Powerful simplicity is the theme of this program. Thoughtful use of the open-apple and closed-apple keys, four-way arrows, and delete key along with typewriter standard use of such keys as tab and caps lock are great improvements.

Apple's other exclusive IIe offering is *Quick File II*, retrofitted from the Apple III program. *Quick File* is today's *File Cabinet*; for its time and for its intended use, *File Cabinet* was a superior program. So is *Quick File*. A supersimple-to-use database, it has all the utilities and features you need for personal use at home or in the office.

Now That We're Here, Where Are We? From what is now known about Apple's new products as well as what is believed to be forthcoming, certain natural avenues of speculation open up.

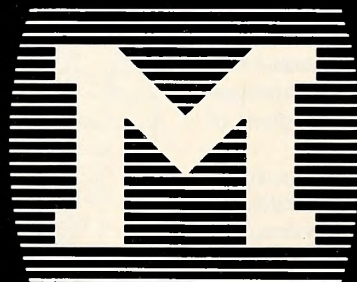
Apple's action in downloading *Quick File* leads to speculation that other Apple III software might be suitable for downloading. The IIe now has as standard memory the minimum amount available in an Apple III. Is a subset of the powerful SOS operating system a possibility? If so, will such II dynamos as *Word Juggler* impinge on already white hot competition in the II market?

The company has generally conceded that they intend to market a product that's now code-named McIntosh. The Mac is apparently a small Lisa in every way. But if Lisa is a one megabyte standard machine, that implies probably a low end 256K for Mac. Coincidentally, 256K is the largest memory now available for the III. Will Apple build a bridge from its 68000-based systems to its 6502-based systems? If so, they would present prospective personal computer owners with unparalleled vertical mobility.

Regardless of Apple's future plans or future actions, generations yet unborn will owe a debt of gratitude to Wozniak and Jobs for having the genius to provide tools for their intellects. It was Apple, more than any other system, that proved the concept of the personal computer.

Lisa and the IIe are just two more in a string of wonderful gifts.

Contributing to "Apple IIe: The Difference" were David Hunter, history, and David Durkee, technical changes; the story was compiled and written by Al Tommervik.



**MORGAN
COMPUTING CO., INC.**
Mainframe Power For Your IBM PC™

TAXCALC

VISCALC™ TEMPLATE for 1040 tax returns
Includes most frequently used schedules and attach-
ments! Also computes income averaging to gain
lowest tax total. (128K IBM PC™ and 64K APPLE™.)
Only \$100.00 . . . Program will pay for itself!

Morgan Computing Co., Inc.
10400 N. Central Expwy., Suite 210 • Dallas, TX 75231

LOVE STAR For Dealer Information Contact:
micro 1-800-527-5078 NATIONAL
INCORPORATED 1-800-442-3272 TEXAS



LISA'S DEBUT

Apple's announcement of Lisa, a souped-up third-generation micro-computer, poses the question of whether the Two Guys from Cupertino show can play in Fortune 1000 theaters.

Of course, it's likely that neither Steve had anything to do with the conundrum Apple now finds itself in. Steve the Wozniak was in school last year and apparently was not active in the Lisa project. Steve the Jobs is rumored to be backing Lisa's little brother, McIntosh, as Apple's next big hit.

If Lisa got off the starting blocks without the active assistance of either of the founding teenagers of Apple, more's the pity. The company certainly didn't choose an easy market to aim toward. So they can use all the genius at their disposal.

Lisa is still in beta testing, so no firsthand knowledge of the quality and reliability of the system is available. But conceptually Lisa is either a stroke of genius or a good example of high tech engineering gone amuck. It all depends on whether it sells.

There's no question but that Lisa is a first-class piece of work. The driving microprocessor is powerful, the inclusion of two inboard, high-density, double-sided drives is far-seeing, provision of sufficient applications software to do the jobs an executive would want to do at his desk is a reflection of an Apple III lesson well learned, and the bundling of the ProFile hard disk probably reflects the not unrealistic expectation that anyone who buys a machine this potent will probably need plenty of storage.

The problem is that Lisa sells at \$9,995. For those of you slow on the pickup, we're discussing five figure dollars here unless you live in a state with a sales tax of less than one-tenth of a mill per dollar. This is not an item expected to be high on impulse buyers' lists. After all, it can't play *Pac-Man*.

The question is why does Apple fearlessly go where others fear to tread? Xerox pioneered the kind of user interface featured on Lisa at \$18,000 per machine, give or take a two-martini lunch. Buyers queued up in numbers estimated to be at least double the population of working lumberjacks in the Gobi Desert.

IBM, one of those other techie companies, saw what Xerox had done and waxed wise. Not desiring to be in the business of selling chain saws to those selfsame Gobi lumberjacks, they entered the market at what appears to be the high end of the low end market. Translated into real English, that means IBM will sell you a real usable machine for about \$4,000.

Apple seems to have almost split the difference: They're twice as high as IBM and half the price of Xerox. It's easy to believe that Xerox is too high. Neither Xerox nor IBM has ever shown any indication to run after-Christmas white sales or Valentine's Day two-for-one sales. Margin is the founding principle in both conglomerates. So, if there's a marketing window at ten grand, why aren't these guys there?

It's patently obvious that Fortune 1000 executive and upper level management personnel are the targets here. There are not many Winchell's Donut franchisees in the market for ten gees of computing power. You can almost visualize the advertising campaign: How much is the efficiency of your top executives worth to you? Underneath the headline will be cuts of Lisa and PC with \$9,995 under Lisa and \$4,000 under PC. Lisa will become the perk of the elite class. That's all of a two-thousand-unit marketplace.

One of the problems in assessing Lisa's future lies in definitions. Everyone knows Apple makes personal computers, so the press kits all

announce Apple's wonderful new personal computer. It's understood that the more you pay a massage parlor, the more personal they get. It's not clear that the same law holds for small computers.

Pundits are fragmenting the market into what they hope are functional definitions if they're to maintain their punditry to the end of the decade. Generally, they all agree that we've either got a home computer, a personal computer, a desktop computer, or a work station. What they don't agree on is which computers go into which categories.

Stopping far short of any consensus is the feeling that home computers cost less than \$500 and have less than 48K of memory. Personal computers cost less than \$2,000 and have 48K or 64K standard. Desktop computers go for 64K to 256K and cost \$2,000 to \$4,000. Nobody knows what a work station is because we aren't there yet.

These definitions, albeit probably all wet, certainly clear the air. Vic-20 and Atari 400 are home computers. Apple II and Atari 800 are personal computers. IBM pc and Apple III are desktop computers. Does this mean Lisa's a work station?

If it does, the experts think Lisa's too early. They say there'll be nine million desktop computers before any significant phasing into work stations commences. That's four or five years away, even if IBM starts selling a million units a year, which is what they're shooting for.

Apple is a company worth worrying about. The number of businesses that have sprung up in support of the Apple II makes Apple the biggest nouveau employer in America. They've been good for a lot of people who have never crossed the city limits of Cupertino.

Apple seems to be riding a fantastic streak of good fortune, and Lisa is at least starting out that way. After using Lisa as a code name for years, the company got attached to it. But the name was owned jointly by Randy Hyde, author, and Sierra On-Line, publisher, of *Lisa 2.5*, an assembler of some renown.

Apple's a big, rich company now. Hyde or Sierra could have perpetrated highway robbery under the ruse of sincere negotiations. Instead, they negotiated a price representing their fair interest in the name. That's Apple's fairy godmother at work again.

But it's okay.

They deserve success.



YOUR ANSWER FOR

pascal
communications

TERM™
"THE PROFESSIONAL"

BY FAR THE MOST SOPHISTICATED PASCAL COMMUNICATIONS SOFTWARE EVER DESIGNED!

- Send **ANY** size or type of PASCAL file including. CODE, .DATA and others!
- Supports up to 9600 baud!
- The **FIRST** PASCAL program to utilize a standardized protocol transfer method to ensure error-free data exchange!
- Wide variety of standard ASCII send modes.

AFFORDABLY PRICED AT \$129.95

southwestern data systems™
P.O. BOX 582-S • SANTEE, CA 92071 • 619/562-3221



Inside Apple

Apple Computer Inc., 20525 Mariani Avenue, Cupertino, California 95014

Vol. 1 No. 2

For the authorized Apple dealer nearest you, call 800-538-9696 (800-662-9238 in California.)

Fruitful Connections.

There are more people in more places making more accessories and peripherals for Apples than for any other personal computer in the world.

Thanks to those people — in hundreds of independent companies — you can make the humblest 1978 Apple II turn tricks that are still on IBM's Wish List for 1984.

But now we're coming out with our very own line of peripherals and accessories for Apple® Personal Computers.

For two very good reasons.

First, compatibility. We've created a totally kluge-free family of products designed to take full advantage of all the advantages built into every Apple.

Second, service and support.



Now the same kindly dealer who keeps your Apple PC in the pink can do the same competent job for your Apple hard-disk and your Apple daisywheel printer.

So if you're looking to expand the capabilities of your Apple II or III, remember:

Now you can add Apples to Apples.

A joy to behold.

The new Apple Joystick II is the ultimate hand control device for the Apple II.

Why is it such a joy to use?

With two firing buttons, it's the first ambidextrous joystick — just as comfortable for lefties as righties.

Of course, it gives you 360° cursor control (not just 8-way like some game-oriented devices) and full X/Y coordinate control.

And the Joystick II contains high-quality components and switches tested to over 1,000,000 life cycles.

Which makes it a thing of beauty. And a joystick forever.



Gutenberg would be proud.

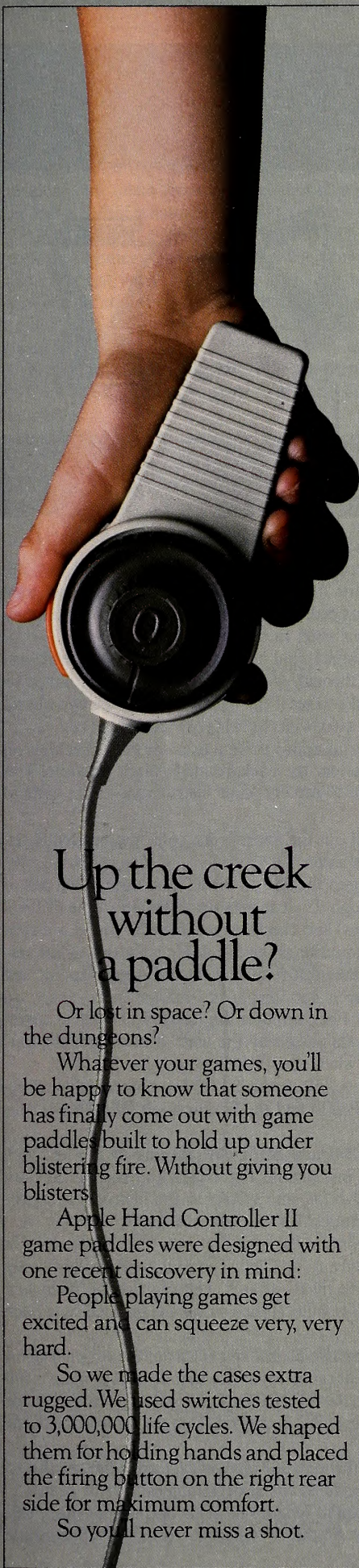
Old Faithful Silentype® has now been joined by New Faithfuls, the Apple Dot Matrix Printer and the Apple Letter Quality Printer.

So now, whatever your budget and your needs, you can hook your Apple to a printer that's specifically designed to take advantage of all the features built into your Apple. With no compromises.

The 7x9 Apple Dot Matrix Printer is redefining "correspondence quality" with exceptional legibility. With 144x160 dots per square inch, it can also create high resolution graphics.

The Apple Letter Quality Printer, which gets the words out about 33% faster than other daisywheel printers in its price range, also offers graphics capabilities. See your authorized Apple dealer for more information and demonstrations. Because, unfortunately, all the news fit to print simply doesn't fit.





Up the creek without a paddle?

Or lost in space? Or down in the dungeons?

Whatever your games, you'll be happy to know that someone has finally come out with game paddles built to hold up under blistering fire. Without giving you blisters.

Apple Hand Controller II game paddles were designed with one recent discovery in mind:

People playing games get excited and can squeeze very, very hard.

So we made the cases extra rugged. We used switches tested to 3,000,000 life cycles. We shaped them for holding hands and placed the firing button on the right rear side for maximum comfort.

So you'll never miss a shot.

A storehouse of knowledge.

If you work with so much data or so many programs that you find yourself shuffling diskettes constantly, you should take a look at Apple's ProFile™, the personal mass storage system for the Apple III Personal Computer.

This Winchester-based 5-megabyte hard disk can handle as much data as 35 floppies. Even more important for some, it can access that data about 10-times faster than a standard floppy drive.

So now your Apple III can handle jobs once reserved for computers costing thousands more.

As for quality

and reliability, you need only store one word of wisdom:
Apple.



Launching pad for numeric data.

Good tidings for crunchers of numerous numbers:

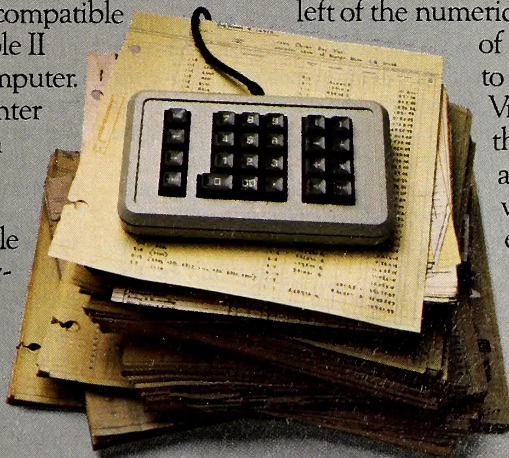
Apple now offers a numeric keypad that's electronically and aesthetically compatible with the Apple II Personal Computer. So you can enter numeric data faster than ever before.

The Apple Numeric Keypad II has a standard calculator-style layout. Appropriate,

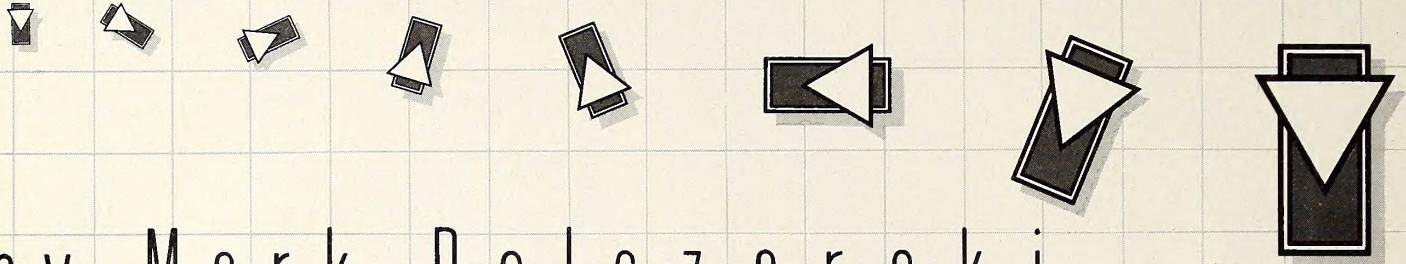
because unlike some other keypads, it can actually function as a calculator.

The four function keys to the left of the numeric pad should be of special interest to people who use VisiCalc®. Because they let you zip around your work sheet more easily than ever, adding and deleting entries.

With one hand tied behind your back.



GRAPHICALLY SPEAKING



by Mark Pelczarski

This month's Graphically Speaking is by guest columnist Eagle Berns.

Filling in areas with color is a very advanced graphic technique. Last month's Graphically Speaking looked at how bit patterns combine to create various colors. Now we'll put theory into practice with a machine language color fill routine.

The routine can fill in any enclosed area, not just squares and rectangles. It allows the use of a wide variety of colors for the fill. These may either be the twenty or so colors included in this program or any color scheme that the user designs through experimentation. The user may even create rainbow effects and random patterns.

The program can be loaded along with any Basic program and called when needed. It can fill areas on either hi-res page, and the area it fills can be either black or white.

This program, working in tandem with any picture packing program, can conserve considerable disk storage space by packing black and white pictures on a disk and then filling in the colors after the unpacking.

The Algorithm. Before the routine can color in anything, you have to tell it what you want done and where. The user supplies information to the routine in locations 0 through 4 of memory. The X coordinate at which filling is to begin goes in locations 0 and 1 and the Y coordinate goes in 2. The color value is poked into location 3, and the choice of hi-res page 1 or 2 is indicated by entering \$20 or \$40 respectively in location 4.

The program begins by computing the internal memory location corresponding to the X,Y pair given (a nontrivial exercise, as those who are familiar with the hi-res memory layout can attest to). We've used look-up tables to accomplish this in previous articles. Computing the address in machine language takes much less memory, but it's also a little slower.

The routine then fills in each byte to the left of the X,Y pair with the appropriate color until a nonblack or nonwhite byte is found. The same technique is then applied on the right. The point immediately above the given point is then selected and, if the background isn't different for this point, the process is repeated. When the upward motion is stopped, the entire process is repeated, moving down from the original point.

The second most difficult part of the task is handling the end conditions when a byte must be partially changed. Here, considerations of even or odd bytes and color anomalies have to be dealt with. These problems require the use of various masking techniques and won't be discussed in detail here.

Keep in mind that with this filling method an enclosed irregular shape may require more than one color fill to be colored in completely. An example of this is shown in a sample program described later. Also, for the examples given, the objects to be filled were generated by hplotting line segments. There is no requirement, however, on how the hi-res screen is created. To save disk space, you could just save coordinates of the endpoints of lines and color fill points and then generate the entire

picture from this information.

A Description of the Program. What follows is a block-by-block description of the essential parts of the code. The areas that the user may wish to modify to fit specific needs are also indicated. Note, for example, the section on color patterns used in the program.

Lines 1 through 35 do some initial housekeeping and parameter saving. The section in lines 36 through 48 finds the bit and byte pointed to by the coordinates and checks to see if the byte is either of the two blacks (00000000 or 10000000) or two whites (11111111 or 01111111).

Lines 49 through 59 set up appropriate masks for data checking on the data bytes based on whether the background is black or white. This calls SETUPB or SETUPW to modify some instructions in the code to use the masks properly.

Lines 60 through 62 pull out the appropriate color pattern requested by the user and store it for later.

The main loop for filling in the line on the left and right (via a call to FILNE) is in lines 63 through 73. It moves up a line at a time (VERT routine computes the address) and checks to see if the bit found is a continuation of the background color to be filled. Lines 74 through 95 essentially repeat the procedure, but they start at the original point and move down a line at a time.

The routine from 96 to 149 computes the horizontal address corresponding to the X coordinate passed by the user. It also finds the particular bit within the byte where the fill will start.

The FILNE routine (lines 150 through 172) just controls the calling of the fill-in-on-right (JSR RGT) and the fill-in-on-left (JSR INS4) routines for a particular line.

The two routines SETUPB and SETUPW, starting at 173 and 193, respectively, modify certain instructions that deal with masking the data byte. They change EORs, ANDs, and ORAs to the instruction appropriate for the masking operation on black versus white.

Lines 220 through 251 contain the code that puts together the byte in hi-res memory with the pattern to be filled. The routine will modify only the part of a byte that is to be filled—that is, a left portion of the byte, a right portion of it, or the entire byte. It then stores the finished byte back in memory.

Lines 252 through 281 handle the movement from the original point to the left, looking for (and stopping at) a byte that doesn't contain a full byte of background. It calls the STORCOLOR routine given earlier for each byte to be modified. Lines 282 through 315 do the same thing to the right of the origin.

The routine in lines 316 through 362 converts a Y coordinate value to the memory address corresponding to the beginning of the row of that Y coordinate. Rather than using a lengthy table to find the location, this routine rearranges the bits of the Y value to form the appropriate address.

Lines 363 through 401 define the local constants and variables

needed for the processing of the code.

Lines 402 to 423 create a table called COLORTAB. The entries in this table are the bit patterns required to form a particular color on the hi-res screen. The first four represent the two blacks and two whites. The next four are the standard hi-res colors supported on the Apple. The remainder (except the last) were found by detective work. The bit configurations were taken from pictures found in other programs. You can give these colors whatever names you like.

There are eight bytes to each entry. Which of them is appropriate depends on whether an even or odd row or column byte is being manipulated. The last entry, SPCL, was provided as a special user entry. By knowing this address (from assembling the program) a user can store any configuration of bytes. Storing random byte values here can create some unusual effects.

The First Sample Program. This small program demonstrates use of the color fill-in routine for generating Venn diagrams (or partially filled-in circles).

```

10 PRINT CHR$(4);"BLOAD FILIN"
20 FILIN = 24576: REM $6000
30 INC = .1:PI = 3.141592
40 HGR : HCOLOR= 3
50 R = 60: CX = 80: CY = 100: GOSUB 120: REM CIRCLE
60 CV = 12: GOSUB 220: REM FILIN
70 R = 60: CX = 150: CY = 100: GOSUB 120
80 CV = 18: GOSUB 220
90 R = 40: CX = 115: CY = 65: GOSUB 120
100 CY = 35: CV = 16: GOSUB 220
110 END
120 REM ***DRAW A CIRCLE****
130 TH = 0.0
140 X = CX + R * COS (TH)
150 Y = CY + R * SIN (TH)
160 HPLLOT X,Y
170 TH = TH + INC
180 X = CX + R * COS (TH): Y = CY + R * SIN (TH)
190 HPLLOT TO X,Y
200 IF TH <= 2 * PI THEN 170
210 RETURN
220 REM ***FILL IN COLOR****
230 POKE 0,CX: POKE 1,0: POKE 2,CY: POKE 3,CV: POKE 4,32:
    CALL FILIN: RETURN

```

And the Second Sample Program. A country scene. Note that more than one starting point was needed for the sky and ground fill-ins. Note also the minimal amount of information it takes to generate the entire picture.

```

10 PRINT CHR$(4);"BLOAD FILIN"
20 HGR : HCOLOR= 3
30 READ X,Y
40 HPLLOT X,Y
50 READ X,Y
60 IF X = - 1 THEN 180
70 HPLLOT TO X,Y
80 GOTO 50
90 DATA 0,95,63,95,63,80,77,80,77,95
100 DATA 77,80,87,70,90,60,87,50,70,40
110 DATA 53,50,50,60,53,70,63,80
120 DATA 63,115,77,115,77,95,190,95
130 DATA 190,80,197,60,247,60,240,80
140 DATA 190,80,190,105,253,105,253,80
150 DATA 247,60,240,80,253,80,240,80
160 DATA 240,105,253,105,253,95,279,95
170 DATA -1,-1
180 READ C,X,Y
190 IF C = - 1 THEN 280
200 POKE 0,X: POKE 1,0: POKE 2,Y: POKE 3,C: POKE 4,32
210 CALL 24576
220 GOTO 180
230 DATA 17,135,20,17,30,80,17,255,80
240 DATA 10,70,60,4,135,135,4,30,105,4,255,100
250 DATA 18,70,95,13,215,70,7,247,76
260 DATA 8,215,95,8,250,95
270 DATA -1,-1,-1
280 END

```

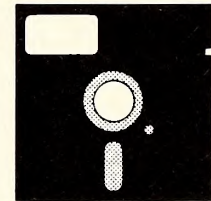
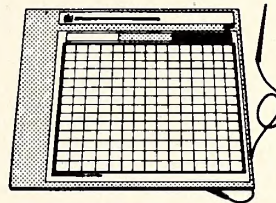
Fill Program Source Listing

```

1
2
3
4 *****
5 *
6 *           HI-RES GRAPHICS COLOR FILL-IN
7 *
8 *           BY
9 *
10 *          EAGLE I. BERNIS
11 *
12 *
13 *****
14 *
15                ORG    $6000
16 XC             EQU    0           ;PARAM: X COORD.
17 YC             EQU    2           ;PARAM: Y COORD.
18 COLINIT        EQU    3           ;PARAM: COLOR CHOICE
19 HPG            EQU    4           ;PARAM: HI-RES PAGE ($20
                                   OR $40)
20 HGRBL          EQU    $26
21 HGRBH          EQU    $27
22 *
23 START          LDA    COLINIT     ;GET COLOR CHOICE
24                ASL                ;TIMES 8
25                ASL
26                ASL
27                STA    COLCH
28                LDA    HPG         ;SAVE OFF PARMS
29                STA    HRPAGE
30                LDA    YC         ;PUT IT AWAY
31                STA    YS
32                LDA    XC         ;GET X COORD. (LSB)
33                STA    XS         ;SAVE IT
34                LDY    XC+1       ;GET X COORD. (MSB)
35                STY    XS+1
36                JSR    HORIZ      ;GO FIND BIT/BYTE
                                   OFFSET
37                LDA    YC         ;COMPUTE VERTICAL
                                   DISP.
38                JSR    VERT

```

The Rich Man's Graphics Tablet vs. The Poor Man's Graphics Tablet



- Draws lines
- Hardware Required
- Apple II's full graphic capability
- 6 Hi-Res colors
- 1 Texture
- No color mixing
- Tracing capabilities
- Pen input
- No shape Table functions
- Move images
- Manual included
- \$795.00

- Drafts lines like a ruler and arcs like a compass
- NO hardware required
- Apple II's full graphic capability
- Unlimited palette of colors
- 59 textures
- Mixing of up to 6 different colors
- Tracing capabilities
- Keyboard input for greater precision
- Full shape table functions
- Move, rotate, duplicate or combine Shapes to built complex pictures
- Tutorial style manual will teach you about your Apple II's Hi-Res graphics
- Lettering also - even upside down and sideways
- \$49.95
- Requires an Apple II 48K with Applesoft ROM and DOS 3.3.

FREE comprehensive Catalog and Newsletter with any purchase.
Otherwise send \$2.00 U.S./\$5.50 Foreign for Catalog and \$1.00
U.S./\$2.00 Foreign for Newsletter.



Mail Order Dept. No. ST
19517 Business Center Dr.
Northridge, Calif. 91324

Phone orders (Need Mastercard or Visa)
U.S.A. (except Calif.) (800) 423-5441
Calif. and Foreign (213) 349-0300
For information or technical questions
(213) 349-5560.

Add \$2.50 U.S./\$10.00 Foreign shipping.
Calif. residents add 6% sales tax.

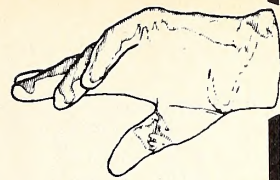
Open Tues-Fri 10AM-5PM

*Apple is the registered trademark of Apple Computer Inc.

Line	Assembly	Comments	Line	Assembly	Comments
39	LDY BYT0		114	BEQ SK256	;"X" IS < 256
40	LDA (HGRBL),Y	;GET FIRST DATA BYTE	115	LDY #S04	;BIT OFFSET
41	ASL	;WIPE OUT SIGN BIT	116	LDX #36	;"X" OFFSET ADDRESS
42	LSR		117	STY BIT0	;TEMPORARY SAVE
43	BIT BIT0	;CHECK ZEROS UNDER MASK	118	CLC	;CLEAR
			119	PLA	;GET
44	BEQ SCN0	;YEP - FILLING IN BLACK	120	ADC BIT0	;ADD IN ANY BIT OFFSET
45	EOR #SFF	;SWITCH TO CHECK ONES	121	STA TEMP	
46	BIT BIT0	;CHECK ONES UNDER MASK	122	SEC	
			123	SBC #126	;18*7
47	BEQ SCN1	;YEP - FILLING IN WHITE	124	BCC NOADJ	
48	RTS	;NEITHER - EXIT	125	STA TEMP	
49	JSR SETUPB	;MOD INSTRS FOR BLACK	126	TXA	
50	LDX #0	;X WILL INDEX PATTERN TO	127	SEC	
			128	ADC #17	
51	LDA (HGRBL),Y	; PICK FROM TABLE	129	TAX	
52	BPL GETPAT	;BRANCH IF PATTERN 0	130	LDA TEMP	
53	LDX #1	;ELSE PATTERN 1	131	SEC	;SET
54	BPL GETPAT	;(JMP GETPAT)	132	BEQ OUT	;ZERO, ALL DONE
55	JSR SETUPW	;MOD INSTRS FOR WHITE	133	INX	;BUMP
56	LDX #2	;CHECK FOR PAT. 2 OR 3	134	SBC #S07	;DECREMENT BY 7
57	LDA (HGRBL),Y		135	BCS SUBLOOP	;IF CARRY SET STILL > 0
58	BPL GETPAT		136	DEX	;WENT
59	LDX #3		137	ADC #S07	;CARRY=0, REPLACE THE 7
60	GETPAT LDA PATTAB,X	;GET PATTERN			
61	STA PATTERN	;O.K., GOT IT	138	OUT STX BYT0	;SAVE FINAL BYTE OFSET
62	LDA YC	;GET Y COORD. (1 BYTE)	139	TAX	;USE
63	LOOP1 JSR VERT	;GET VER. OFFSET (TOO HGRBL/H)	140	LDA TABLE,X	;PULL OUT BIT MASK
			141	STA BIT0	;SAVE BIT MASK
64	LDY BYT0	;BYTE OFFSET	142	EOR #SFF	;AND INVERSE
65	LDA (HGRBL),Y	;GET DATA BYTE	143	STA BIT1	
66	INS1 EOR #SFF		144	LDA TAB2,X	;NEED THIS BIT TOO
67	BIT BIT0	;ARE WE WHITE/BLACK?	145	STA BITL	
68	BNE DONE	;NOPE, GO DO BOTTOM HALF	146	RTS	;LEST
			147		
69	JSR FILNE	;GO FILL IN LINE	148		
70	DEC YC	;MOVE UP A LINE	149		
71	LDA YC		150	*	
72	CMP #SFF		151	* FILNE - FILL LINE	
73	BNE LOOP1		152	*	
74	DONE LDY YS	;RESTORE Y COORD.	153	FILNE STY SBY	;SAVE FOR LATER
75	INY	;DOWN ONE ROW	154	LDA #S7F	;INIT FORMAL MASK
76	STY YC		155	STA SMASK	
77	TYA	;NEED IT IN A	156	LDA BITL	;STARTING MASK
78	*		157	STA MASK	
79	* NOW, REPEAT THE ABOVE FOR BELOW POINT		158	LDA (HGRBL),Y	
80	*		159	JSR INS4	;FILL IN ON LEFT
81	LOOP2 JSR VERT	;GET VER. OFFSET (TOO HGRBL/H)	160	LDY SBY	;GET FIRST DATUM AGAIN
			161	LDA (HGRBL),Y	
82	LDY BYT0	;BYTE OFFSET	162	INS3 ORA BIT0	;TURN BACK ON/OFF
83	LDA (HGRBL),Y	;GET DATA BYTE	163	STA (HGRBL),Y	;(LFT TURNED EM OFF/ON)
84	INS2 EOR #SFF		164	LDA #S7F	
85	BIT BIT0	;ARE WE WHITE/BLACK?	165	STA SMASK	
86	BNE DONE1	;NOPE, GO DO BOTTOM HALF	166	LDA BITL	;SET INIT. RGT MASK
			167	STA MASK	
87	JSR FILNE	;GO FILL IN LINE	168	LSR MASK	
88	INC YC	;MOVE DOWN A LINE	169	JSR RGT	;FILL IN RIGHT
89	LDA YC		170	RTS	;RETURN TO SENDER
90	CMP #192		171		
91	BNE LOOP2		172		
92	DONE1 RTS	;RETURN	173	SETUPB LDA NOPINS	;NOP
93			174	STA INS1	
94			175	STA INS1+1	
95			176	STA INS2	
96	*****		177	STA INS2+1	
97	*		178	LDA ANDINS	;AND BIT0
98	* HORIZ: COMPUTE X OFFSET FOR THE		179	STA INS3	
99	* HIGH-RESOLUTION GRAPHICS		180	LDA ANDINS+1	
100	* SCREEN		181	STA INS3+1	
101	*		182	LDA ANDINS+2	
102	* ACCUMULATOR: LSB OF THE "X" OFFSET		183	STA INS3+2	
103	*		184	LDA EORINS	;EOR #SFF
104	* Y REGISTER: MSB OF THE "X" OFFSET		185	STA INS4	
105	*		186	STA INS5	
106	* X RANGE: 0-279(\$117)		187	LDA EORINS+1	
107	*		188	STA INS4+1	
108	*****		189	STA INS5+1	
109	HORIZ PHA	;SAVE	190	RTS	
110	AND #S1	;EVEN OR ODD ADDRESS?	191		
111	STA EVODD	;SAVE EVEN-ODD FLAG	192		
112	LDX #S00	;ASSUME < 256	193	SETUPW LDA EORINS	;EOR #SFF



VOLUME TWO!



& Amper-Magic

T.M.

by Bob Nacon

The success of the original Amper-Magic™ program package and the introduction of its technique for attaching new commands to Applesoft programs has stimulated the production of Command Library™ packages designed around a 'theme' such as information display or output, input, memory management, etc., which will enhance your Applesoft programs. They will give your program a professional operation and appearance by increasing speed, reducing size, and giving you features you never could have before, while still allowing you to program with the ease of BASIC.

Amper-Magic Command Library No. 2 is dedicated to information display and output capabilities. Read on and enjoy the new programming power Amper-Magic Command Library No. 2 will give you.

This disk contains 27 machine language routines ready to be inserted quickly and painlessly into your own Applesoft programs. Included among them is the most powerful PRINT USING routine yet created for Applesoft, as well as some small but very handy routines for controlling the appearance and activity on the display screen.

In order to use these commands, you will need the Amper-Magic program itself which is contained on Volume One. SOME commands on this disk are:

- ** Access the most powerful PRINT USING command EVER for the Apple. It sure does more than just line up decimal points! It works with strings of characters as well as numbers, and lets the program decide whether to make them Flash or Inverse or Normal depending on conditions you specify. With numbers, you can have fixed or floating dollar sign and/or optional commas and a variety of fill characters. You can embed standard phrases within your format design. You can even print to the screen WHILE outputting to the printer! And generate NO GARBAGE to collect! All in all, the most powerful PRINT USING yet!
- ** Print to the screen while a peripheral is active
- ** Save and restore instantly any text screen, no matter how complex with flashing, inverse, and any window settings...
- ** Make your program WAIT a length of time specified in ordinary seconds (to the tenth of a second); the time may be a variable or expression which can be controlled by the program...
- ** Print anywhere on the screen under program control, either with absolute movements or with relative movements...
- ** Print string arrays to any device, with or without an appended special character, and WITHOUT A LOOP...
- ** Set, clear, or toggle ANY bit or bits anywhere in RAM memory...
- ** Check the keyboard when called, pause if SPACEBAR is pressed, then continue if SPACE is pressed again or GOTO a location if RETURN is pressed...
- ** Print the current text screen on command or from the program...
- ** Send ASCII characters to peripheral devices and POKE peripheral card memory to set or clear bits for control purposes...
- ** AND MORE....

\$ 35

& Magic and Amper-Magic are trademarks of Anthro-Digital, Inc.
Apple, Apple II, Applesoft are trademarks of Apple Computers, Inc.

Also available from Anthro-Digital: Versacalc (several versions), Visi-Caids, The Executive Secretary, The Personal Secretary, and Executive Speller, Hebrew II and Hebrew II Plus, S-C Macro Assembler, Quick Trace, Amper-Magic, The Rental Manager, F.A.R.M., The Performance Manager, Omniscan VideoDisc interface, and Flipper.

DEALERS INVITED

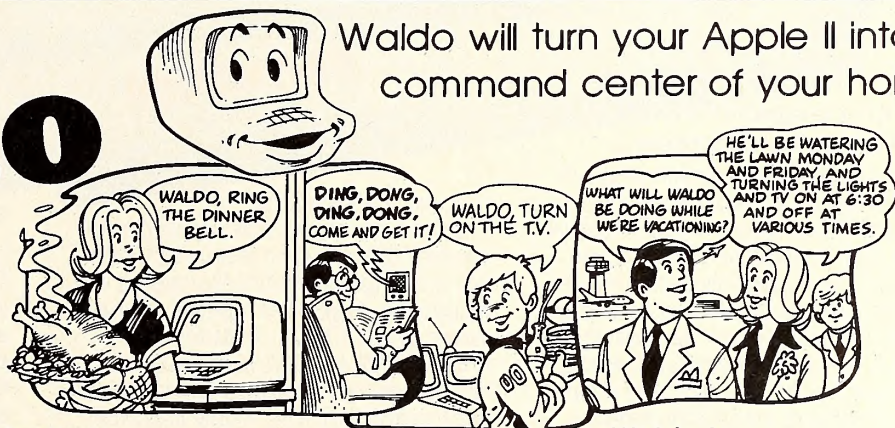
Anthro-Digital, Inc.
103 Bartlett Avenue
Pittsfield, MA 01201
413-448-8278

195	STA	INS2		268	NOP	
196	LDA	EORINS+1		269	BEQ	LFTBK ;ELSE GO STORE IT
197	STA	INS1+1		270	CHNGALL	LDA #\$00 ;CHANGE FULL BYTE
198	STA	INS2+1		271	STA	SMASK
199	LDA	ORAINS	;ORA BIT0	272	LFTBK	JSR STORCOLOR ;SAVE MODIFIED BYTE
200	STA	INS3		273	LDA	LBITL ;SCAN FROM SIDE NOW
201	LDA	ORAINS+1		274	STA	MASK
202	STA	INS3+1		275	LDA	#\$7F
203	LDA	ORAINS+2		276	STA	SMASK ;RESET
204	STA	INS3+2		277	DEY	;MORE BYTES?
205	LDA	NOPINS	;NOP	278	BPL	LFT ;YEP - GO BACK
206	STA	INS4		279	RTS	
207	STA	INS5		280	DONLFT	JSR STORCOLOR ;SAVE FINAL VALUE
208	STA	INS4+1		281	RTS	;BYE-BYE
209	STA	INS5+1		282	*	
210	RTS			283	* RGT - RIGHT FILL ROUTINE	
211				284	*	
212				285	RGT	LDY SBY ;GET DISPL. FROM EDGE
213	NOPINS	NOP		286	RGTSTRT	LDA (HGRBL),Y ;DATA
214	EORINS	EOR	#\$FF	287	CMP	PATTERN ;SEE IF FULL WORD
215	ANDINS	AND	BIT1			CHANGE
216	ORAINS	ORA	BIT0	288		BEQ CHGALL2 ; BRANCH IF SO
217				289	INS5	EOR #\$FF ;SWITCH:B/W
218				290	LPRGT	BIT MASK ;CHECK BIT IN QUESTION
219				291		BEQ DONRGT ;IT'S ZERO/ONE STOP
220	STORCOLOR	LDA	(HGRBL),Y ;GET DATA	292		TAX ;SAVE A
221		AND	SMASK ;WIPE OUT CHANGING	293		LDA SMASK ;GET FORMAL MASK
			BITS	294		EOR MASK ;NO, MAKE IT ZERO
222		STA	TEMP2 ;SAVE FOR A WHILE	295		STA SMASK ;STORE IT
223		LDA	SMASK ;NOW GET WHAT WE PUT	296		TXA ;RESTORE
			IN	297		ASL MASK ;GO TO NEXT BIT
224		CMP	#\$7F ;DID ANYTHING CHANGE?	298		BPL LPRGT ;BACK IF MORE BITS
225		BEQ	STCOLOUT ;NOPE - GET OUT	299		BMI RGTBK
226		EOR	#\$FF ;ONES WE WANT	300	CHGALL2	LDA #\$00 ;CHANGE FULL BYTE
227		STA	TEMP3 ;SAVE	301		STA SMASK
228		LDA	YC ;COMPUTE WHICH ROW/	302	RGTBK	JSR STORCOLOR ;SAVE MODIFIED BYTE
			COL/BYTE	303		LDA LBITR ;SCAN FROM SIDE NOW
229		AND	#1 ; WE WANT FROM COLOR	304		STA MASK
			TABLE	305		LDA #\$7F
230		ASL		306		STA SMASK ;RESET
231		ASL		307		INY ;MORE
232		STA	TEMP4 ;HOLD FOR ADDITION	308		CPY #40 ;RIGHT EDGE
233		TYA		309		BNE RGTSTRT ;BACK FOR MORE
234		AND	#3	310		RTS
235		CLC		311	DONRGT	JSR STORCOLOR ;SAVE FINAL VALUE
236		ADC	TEMP4	312		RTS ;BYE-BYE
237		STA	TEMP4	313		
238		LDA	COLCH	314		
239		CLC		315		
240		ADC	TEMP4 ;NOW HAVE EVEN/ODD/	316	*	
			ROW/COL	317	*	
241		TAX		318	*	
			;SET TO INDEX INTO	319	*	HI-RES GRAPHICS
			TABLE	320	*	
242		LDA	COLORTAB,X	321	*	192 VERTICAL ADDRESSES \$00-\$BF
243		STA	COLOR	322	*	< XXYY,YZZZ >
244		LDA	TEMP3 ;GET BITS WE WANT FROM	323	*	MAPPED INTO THE FOLLOWING WORD:
			COLOR	324	*	
245		AND	COLOR ; GOT THEM	325	*	< 001Z,ZZYY>,<YAAA,A000>
246		ORA	TEMP2 ;MUSH INTO MEM. BYTE	326	*	
247		STA	(HGRBL),Y ;AND STUFF IT IN	327	*	XX VALUES: 00, 01, & 10; 11 IS OUT OF RANGE
248	STCOLOUT	RTS		328	*	00 -> 0000 (A)
249				329	*	01 -> 0101 (A)
250				330	*	10 -> 1010 (A)
251				331	*	
252	*			332	*	
253	* LFT - LEFT FILL ROUTINE			333	*	
254	*			334	*	DEFINE OUR HI-RES BASE ADDRESS
255	LFT	LDA	(HGRBL),Y ;DATA	335	VERT	LDX #\$0 ;SET X1,X2 BASE
256		CMP	PATTERN ;SEE IF FULL WORD	336		STA HGRBL ;SAVE FOR BIT TEST
			CHANGE	337		BIT HGRBL ;X1,X2 TO "N", "V"
257		BEQ	CHNGALL ;BRANCH IF SO	338		BPL SKX1 ;BR-X1=0
258	INS4	EOR	#\$FF ;SWITCH:B/W	339		LDX #\$A0 ;SET X1,X2 BASE : LESS
259	LPLFT	BIT	MASK ;CHECK BIT IN QUESTION			"ROR"
260		BEQ	DONLFT ;IT'S ZERO/ONE STOP	340	SKX1	BVC SKX2 ;BR-X2=0
261		TAX		341		LDX #\$50 ;SET X1,X2 BASE : LESS
262		LDA	SMASK ;GET FORMAL MASK			"ROR"
263		EOR	MASK ;NO, MAKE IT ZERO	342	SKX2	STX HGRBL ;SAVE (LOW) ADDRESS
264		STA	SMASK ;SAVE IT	343		TAX ;SAVE
265		TXA		344		AND #\$7 ;LEAVE "ZZZ"
266		LSR	MASK ;GO TO NEXT BIT	345		ASL ;(X)2, CARRY=0
267		BNE	LPLFT ;BACK IF MORE BITS			

346	ASL		;(X)4, CARRY=0	385	TABLE	DFB	3		;BIT MASK TABLE
347	ADC	HRPAGE	;+BASIC BASE	386		DFB	3		
			\$2000/\$4000	387		DFB	6		
348	STA	HGRBH	;SAVE (HIGH) ADDRESS	388		DFB	12		
349	TXA		;GET	389		DFB	24		
350	ROR		;SET UP FOR	390		DFB	48		
351	ROR		;Y3 IN CARRY	391		DFB	96		
352	ROR		;POSITION	392	PATTAB	DFB	0		;00000000
353	ROR		;Y3->CARRY, Y1,Y2 LOW	393		DFB	128		;10000000
			PART	394		DFB	127		;01111111
			;NOW HAVE Y3,XXXX,000	395		DFB	255		;11111111
354	ROR	HGRBL		396	TEMP2	DFB	0		
355	*;AND THE CARRY IS CLEAR			397	TEMP3	DFB	0		
356	AND	#\$3	;JUST Y1,Y2	398	TEMP4	DFB	0		
357	ADC	HGRBH	;SET IN HIGH,CARRY=0	399	COLOR	DFB	0		
358	STA	HGRBH	;SAVE OFF FINAL RESULT	400	COLCH	DFB	0		
359	RTS		;LEST	401	CPLUS1	DFB	22		;WHERE VAR. PATTERN GOES
360									
361									
362				402	COLORTAB	DFB	\$00,\$00,\$00,\$00,\$00,\$00,\$00,\$00		
363	EVODD	DFB	0	403		DFB	\$80,\$80,\$80,\$80,\$80,\$80,\$80,\$80		
364	BYTO	DFB	0	404		DFB	\$FF,\$FF,\$FF,\$FF,\$FF,\$FF,\$FF,\$FF		
365	BIT0	DFB	0	405		DFB	\$7F,\$7F,\$7F,\$7F,\$7F,\$7F,\$7F,\$7F		
366	BIT1	DFB	0	406		DFB	\$2A,\$55,\$2A,\$55,\$2A,\$55,\$2A,\$55		
367	XS	DA	0	407		DFB	\$AA,\$D5,\$AA,\$D5,\$AA,\$D5,\$AA,\$D5		
368	YS	DFB	0	408		DFB	\$55,\$2A,\$55,\$2A,\$55,\$2A,\$55,\$2A		
369	SBY	DFB	0	409		DFB	\$D5,\$AA,\$D5,\$AA,\$D5,\$AA,\$D5,\$AA		
370	BITL	DFB	0	410		DFB	\$33,\$66,\$4C,\$19,\$4C,\$19,\$33,\$66		
371	MASK	DFB	0	411		DFB	\$B3,\$E6,\$CC,\$99,\$CC,\$99,\$B3,\$E6		
372	SMASK	DFB	0	412		DFB	\$22,\$44,\$08,\$11,\$08,\$11,\$22,\$44		
373	HRPAGE	DFB	\$40	413		DFB	\$A2,\$C4,\$88,\$91,\$88,\$91,\$A2,\$C4		
374	TEMP	DFB	0	414		DFB	\$11,\$22,\$44,\$08,\$44,\$08,\$11,\$22		
375	PATTERN	DFB	\$FF	415		DFB	\$91,\$A2,\$C4,\$88,\$C4,\$88,\$91,\$A2		
376	NEWCOLOR	DFB	\$00	416		DFB	\$6E,\$5D,\$3B,\$77,\$3B,\$77,\$6E,\$5D		
377	TAB2	DFB	2	417		DFB	\$EE,\$DD,\$BB,\$F7,\$BB,\$F7,\$EE,\$DD		
378		DFB	2	418		DFB	\$5D,\$3B,\$77,\$6E,\$77,\$6E,\$5D,\$3B		
379		DFB	4	419		DFB	\$DD,\$BB,\$F7,\$EE,\$F7,\$EE,\$DD,\$BB		
380		DFB	8	420		DFB	\$66,\$4C,\$19,\$33,\$19,\$33,\$66,\$4C		
381		DFB	16	421		DFB	\$E6,\$CC,\$99,\$B3,\$99,\$B3,\$E6,\$CC		
382		DFB	32	422		DFB	\$33,\$66,\$4C,\$19,\$4C,\$19,\$33,\$66		
383	LBITL	DFB	64	423		DFB	\$B3,\$E6,\$CC,\$99,\$CC,\$99,\$B3,\$E6		
384	LBITR	DFB	1	424	SPCL	DFB	\$FF,\$00,\$FF,\$00,\$00,\$FF,\$00,\$FF		

Meet...
Waldo

The Voice-Activated
Home Control System
For the Apple II™



Waldo will turn your Apple II into the
command center of your home.

Waldo has as standard features:

- voice recognition (Note: Waldo's speaking voice is optional)
- real-time clock/calendar with battery backup for continuous operation
- BSR X-IO home control interface with master and remote control modules
- stereo music and vast and varied sound effect capabilities
- a disc with a full library of application programs including the HOUSEMASTER voice/time control program depicted above
- a complete operating manual

Waldo is:

- a multi-function circuit board with a complete software package
- easily plugged into any Apple II computer
- a voice link between you and your computer
- a control link between your computer and your home
- the heart of a system that will be expanded with a variety of plug-in components and new software

Apple II is a registered trademark of Apple Computer, Inc.

Please send me:
☐ **WALDO**-main board with standard features-\$599.00
☐ **VOICE**-robot type synthesized voice-\$199.00
☐ Additional information

Method of Payment:
☐ Check or money order
☐ Visa/Mastercard
☐ COD (add \$5.00)
Prepaid orders shipped free.
VA residents add 4% sales tax.

Name	
Address	Apt. #
City	State
Zip	
Signature	Exp. date

Mail to: **ARTRA, INC.**, P.O. Box 653,
Arlington, VA 22216 (703) 527-0455

Emulates these terminals *exactly*.

IBM 3101
DEC VT100, VT52
Data General D200
ADDS Regent 20, 25, 40
Hazeltime 1400, 1410, 1500
Lear Siegler ADM-3A, ADM-5
TeleVideo 910
Teletype Model 33 KSR

Apple is a trademark of
Apple Computer, Inc.

New File Transfer Language

BREAK
CATALOG
CHAIN
CONFIGURE
CONNECT
CONVERSE
DIAL
END
HANGUP
LOG
MONITOR
NOLOG
ONERR
PAUSE
PROMPT
RECEIVE
REMARK
RETRIES
SEND
SPECIAL
SPEED
TIMEOUT
XMIT:WAIT

Supports these
interface boards.

Apple Communications Card
Apple Parallel Printer
Apple Serial Interface
Apple Super Serial Card
Bit 3 Dual-Comm Plus™
CCS 7710, 7720, 7728
Hayes Micromodem II™
Hayes Smartmodem™ 300, & 1200
Intra Computer PS10
Mountain Computer CPS Card™
Novation Apple-Cat II™ 300 & 1200
Orange Micro Grappler™
Prometheus VERSAcad™
SSM ASIO, APIO, AIO, AIO II™

Supports your 80-column hardware.

ALS Smarterm™
Bit 3 Full-View 80™
Computer Stop Omnivision™
M&R Sup'R'Terminal™
STB Systems STB-80™
Videx Videoterm™
Vista Computer Vision 80™
Wesper Micro Wizard 80™

Your host computer won't know the difference!

Softerm provides an *exact* terminal emulation for a wide range of CRT terminals which interface to a variety of host computer systems. Special function keys, sophisticated editing features, even local printer capabilities of the terminals emulated by Softerm are fully supported. Softerm operates with even the most discriminating host computer applications including video editors. And at speeds up to 9600 baud using either a direct connection or any standard modem.

Unmatched file transfer capability

Softerm offers file transfer methods flexible enough to match any host computer requirement. These include *character protocol* with user-definable terminator and acknowledge strings, block size, and character echo wait, and the intelligent *Softrans™* protocol which provides reliable error-free transmission and reception of data. The character protocol provides maximum flexibility for text file transfers. Any type file may be transferred using the Softrans protocol which provides automatic binary encoding and decoding, block checking with error recovery, and data compression to enhance line utilization. A FORTRAN 77 source program is supplied with Softerm which is easily adaptable to any host computer to allow communications with Softerm

using the Softrans protocol.

Softerm file transfer utilizes an easy to use *command language* which allows simple definition of even complex multiple-file transfers with handshaking. Twenty-three high-level commands include *DIAL, CATALOG, SEND, RECEIVE, ONERR, HANGUP, MONITOR* and others which may be executed in immediate command mode interactively or from a file transfer macro command file which has been previously entered and saved on disk.

Built-in utilities

Softerm disk utilities allow DOS commands such as CATALOG, INIT, RENAME, and DELETE to be executed allowing convenient file maintenance. Local file transfers allow files to be displayed, printed, or even copied to another file without exiting the Softerm program. Numerous editing options such as tab expansion and space compression are provided to allow easy reformatting of data to accommodate the variations in data formats used by host computers. Softerm supports automatic dialing in both terminal and file transfer modes. Dial utilities allow a *phone book* of frequently used numbers to be defined which are accessed by a user-assigned name and specify

the serial interface parameters to be used.

Online Update Service

The Softronics Online Update Service is provided as an additional support service at no additional cost to Softerm users. Its purpose is to allow fast turnaround of Softerm program fixes for user-reported problems using the *automatic patch facility* included in Softerm as well as a convenient distribution method for additional terminal emulations and I/O drivers which become available. *User correspondence* can be electronically mailed to Softronics, and *user-contributed* keyboard macros, file transfer macros, and host adaptations of the Softrans FORTRAN 77 program are available on-line.

Most advanced communications software available

Just check Softerm's 300 page user manual. You simply can't buy a more sophisticated package or one that's easier to use. Available now for only \$150 from your local dealer or Softronics, Inc.

SOFTRONICS

6626 Prince Edward, Memphis, TN 38119. 901-755-5006

BEGINNERS' CORNER

BY CHRISTOPHER U. LIGHT

Last month we entered the Monitor, wrote a very short machine language program, and examined memory directly. Our purpose was to see what happens when strings entered from the keyboard accumulate and threaten to take over the space of running programs. In the process we learned something about machine language. Even for a beginner, a bit of knowledge about machine language, including the ability to load, save, and move binary files, is good to have.

Understanding your Apple's memory map and how to manipulate binary files can help you get the most out of certain commercial packages. Take for example *The Graphics Magician* by Chris Jochumson, David Lubar, and Mark Pelczarski and *Electric Duet* by Paul Lutus.

Each package provides in its documentation a short Basic program for playing or displaying your work, but these programs are there mostly as examples. To do anything more complicated than demonstrate one song or picture at a time, you'll have to build on these programs, and that is where your grasp of memory maps, binary files, and hexadecimal numbering will come in handy.

Let's consider hexadecimal first. An understanding of this number system is important because it is the only number system that the Monitor understands. In addition, hexadecimal numbers sometimes appear in DOS commands.

The hexadecimal number system isn't as difficult to learn as it looks. Hexadecimal means base sixteen, and base sixteen works the same way as base ten except that there are sixteen digits in the basic set instead of ten. In base ten, the numerals zero through nine comprise the entire set of

digits; after that, we begin counting sets. Twelve means one whole set plus two of a second set. In base sixteen, there are sixteen numerals in a set: zero through nine and A through F. If you had F golf balls, and you were to count them using base ten, you'd count fifteen of them. The number after F in hexadecimal is written 10. Yup, ten still represents one full set and the zeroth item of a second set.

To make it clear what number system we are using, we usually prefix a hexadecimal number with a dollar sign; 10 means ten in decimal, while \$10—for hex ten—means sixteen in decimal.

The numeral 100 stands for one full set of sets, or one full set squared. In decimal, it's the number of yards on a football field. In hex, \$100 is still one full set of sets; but translating to decimal, that means 256 or sixteen (one full set) times sixteen. Each place is worth sixteen decimal times the place to its right. (If you counted the yards in a football field in hex, there'd be \$64—count 'em!)

Once you grasp the concept of bases other than ten, understanding hexadecimal isn't too difficult, but converting between the two systems in your head is still tedious and can lead to errors. Table 1 shows the conversion values for the decimal numbers 0 to 256.

Place an initialized disk in your boot drive and turn on your Apple. It's a good idea to get into the habit of always booting your system with a disk in drive 1. The Apple's disk operating system (DOS), unfortunately, is not permanently in hardware as is Basic. You must load it from a disk every time you turn on the power. If you don't do that, you can't save any program you write (except on cassette, if you have a

Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex
00	\$00	32	\$20	64	\$40	96	\$60	128	\$80	160	\$A0	192	\$C0
01	\$01	33	\$21	65	\$41	97	\$61	129	\$81	161	\$A1	193	\$C1
02	\$02	34	\$22	66	\$42	98	\$62	130	\$82	162	\$A2	194	\$C2
03	\$03	35	\$23	67	\$43	99	\$63	131	\$83	163	\$A3	195	\$C3
04	\$04	36	\$24	68	\$44	100	\$64	132	\$84	164	\$A4	196	\$C4
05	\$05	37	\$25	69	\$45	101	\$65	133	\$85	165	\$A5	197	\$C5
06	\$06	38	\$26	70	\$46	102	\$66	134	\$86	166	\$A6	198	\$C6
07	\$07	39	\$27	71	\$47	103	\$67	135	\$87	167	\$A7	199	\$C7
08	\$08	40	\$28	72	\$48	104	\$68	136	\$88	168	\$A8	200	\$C8
09	\$09	41	\$29	73	\$49	105	\$69	137	\$89	169	\$A9	201	\$C9
10	\$0A	42	\$2A	74	\$4A	106	\$6A	138	\$8A	170	\$AA	202	\$CA
11	\$0B	43	\$2B	75	\$4B	107	\$6B	139	\$8B	171	\$AB	203	\$CB
12	\$0C	44	\$2C	76	\$4C	108	\$6C	140	\$8C	172	\$AC	204	\$CC
13	\$0D	45	\$2D	77	\$4D	109	\$6D	141	\$8D	173	\$AD	205	\$CD
14	\$0E	46	\$2E	78	\$4E	110	\$6E	142	\$8E	174	\$AE	206	\$CE
15	\$0F	47	\$2F	79	\$4F	111	\$6F	143	\$8F	175	\$AF	207	\$CF
16	\$10	48	\$30	80	\$50	112	\$70	144	\$90	176	\$B0	208	\$D0
17	\$11	49	\$31	81	\$51	113	\$71	145	\$91	177	\$B1	209	\$D1
18	\$12	50	\$32	82	\$52	114	\$72	146	\$92	178	\$B2	210	\$D2
19	\$13	51	\$33	83	\$53	115	\$73	147	\$93	179	\$B3	211	\$D3
20	\$14	52	\$34	84	\$54	116	\$74	148	\$94	180	\$B4	212	\$D4
21	\$15	53	\$35	85	\$55	117	\$75	149	\$95	181	\$B5	213	\$D5
22	\$16	54	\$36	86	\$56	118	\$76	150	\$96	182	\$B6	214	\$D6
23	\$17	55	\$37	87	\$57	119	\$77	151	\$97	183	\$B7	215	\$D7
24	\$18	56	\$38	88	\$58	120	\$78	152	\$98	184	\$B8	216	\$D8
25	\$19	57	\$39	89	\$59	121	\$79	153	\$99	185	\$B9	217	\$D9
26	\$1A	58	\$3A	90	\$5A	122	\$7A	154	\$9A	186	\$BA	218	\$DA
27	\$1B	59	\$3B	91	\$5B	123	\$7B	155	\$9B	187	\$BB	219	\$DB
28	\$1C	60	\$3C	92	\$5C	124	\$7C	156	\$9C	188	\$BC	220	\$DC
29	\$1D	61	\$3D	93	\$5D	125	\$7D	157	\$9D	189	\$BD	221	\$DD
30	\$1E	62	\$3E	94	\$5E	126	\$7E	158	\$9E	190	\$BE	222	\$DE
31	\$1F	63	\$3F	95	\$5F	127	\$7F	159	\$9F	191	\$BF	223	\$DF
												224	\$E0
												225	\$E1
												226	\$E2
												227	\$E3
												228	\$E4
												229	\$E5
												230	\$E6
												231	\$E7
												232	\$E8
												233	\$E9
												234	\$EA
												235	\$EB
												236	\$EC
												237	\$ED
												238	\$EE
												239	\$EF
												240	\$F0
												241	\$F1
												242	\$F2
												243	\$F3
												244	\$F4
												245	\$F5
												246	\$F6
												247	\$F7
												248	\$F8
												249	\$F9
												250	\$FA
												251	\$FB
												252	\$FC
												253	\$FD
												254	\$FE
												255	\$FF

Table 1. Decimal-to-hexadecimal conversion values.

SOUTHWESTERN DATA SYSTEMS

PRESENTS

Spanish

for the Traveler™

A PRACTICAL & EASY METHOD FOR LEARNING (OR BRUSHING-UP ON) SPANISH USED BY TRAVELERS.

ADVENTURE, FUN, EDUCATION, and history are all reasons people travel to other countries. The problem is, when traveling to countries where little or no English is spoken, how to communicate. By spending a few hours with Spanish for the Traveler, you can gain a basic understanding of Spanish and at the same time provide yourself with a MAGIC KEY which will open doors to the local culture not normally available to the average traveler. In a Latin country, anyone who tries to speak the Language is almost always treated with a smile and warmth by the people of that country. The way to gain this edge is to practice Spanish with Spanish for the Traveler before your trip.

Because:

- It's a quick and easy way to learn Spanish useful in traveling.
- It's an opportunity to learn some of the basics of Spanish without the necessity of attending classes, lectures or listening to endless records.
- It's presented in a manner which catches your interest immediately and encourages you to continue building your Spanish vocabulary.
- It provides you with the essentials of Spanish necessary to make your trip as enjoyable as possible. With emphasis on Spanish required for Your arrival, Shopping for Souvenirs, Seeing the Sights, Touring the Country, Dining Out and Getting Acquainted, almost every situation is covered.

Package Includes:
diskette, 4 audio cassettes, and take-along manual.

System Requirements:
48K Apple II / II+ with DOS 3.3
and audio cassette tape player.

PRICE: 59.95
CALIFORNIA RESIDENTS
PLEASE ADD 6% SALES TAX.

southwestern data systems™

P.O. BOX 582-S • SANTEE, CALIFORNIA 92071 • 619/562-3221

tape recorder handy).

Let's reuse that four-byte machine language program we wrote last month. It doesn't do anything but jump to a subroutine in ROM that rings a bell, but the techniques you use to manipulate this program are the same ones you need for working with the more complicated programs you find as part of the packages you purchase.

First, type *call -151*. The prompt should change from a bracket to an asterisk indicating that you're in the Monitor, where all the commands are expressed in hexadecimal numbers. Although we put the dollar sign symbol in front of a number to indicate that it's in hex notation when we're writing about it or issuing a DOS command, we don't use it in the Monitor because hex is the Monitor's native language. Type *9000.900F*. This is the Monitor command to list the instructions in the sixteen bytes of memory from \$9000 to \$900F. You'll get two lines that begin with 9000— and contain a bunch of pairs of numbers (what numbers depends on what your Apple's been up to). Now type:

```
9000: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Each pair of zeros is separated from the next pair by one space. The colon after a memory location is the Monitor command to enter the next two digits in that location, the following two digits in the next location, and so on. Type *9000.900F* again. You should see that you've zeroed out these sixteen memory locations.

Now enter a program by typing *9000:20 DD FB 60*. Again list it to proofread it and make sure it's there. The command 20 is the machine language equivalent of *gosub*, while the command 60 is *return*. Location FBDD (64477) is a built-in Applesoft subroutine high up in memory that rings the bell once.

The number indicating a memory location requires two bytes. Because of an idiosyncrasy of the microprocessor, the bytes must fall in reverse order. Thus location number \$1357 is entered into memory as 57 13. Type *9000G*, and you should hear a beep from your speaker. The command G, for *go*, is the Monitor equivalent of *run*.

Now that we have a machine language program in memory, let's move it around. Type *0G* (zero G) to reenter Basic. If for some reason that doesn't work, hit *reset*; this won't erase your program. When you want to save a Basic program, typing *save* and the file name is enough because your Apple can hold only one Basic program at a time and keeps pointers in special places in its own memory to tell it where the program begins and ends. Machine language programs, however, can be anywhere, and there can be thousands of them in memory at a time. Therefore you can save them on a disk only if you can tell DOS which bytes in memory to save as a single program. You do this by typing *bsave*, to indicate that the file will contain a binary data or a machine language program, followed by the program's beginning memory address and, instead of its ending address, its length in bytes. Type:

```
BSAVE TEST, A$9000,L$4
```

and then check the catalog to make sure that it contains a binary file named Test. You can also use decimal notation for the address and length if you want by typing *A36864,L4* instead. In both cases a comma is needed after the name and between the address and the length.

Even though you can use decimal notation, there's an advantage to hex notation once you get used to it. Many machine language programs, including both *The Graphics Magician's* drawing program and *Electric Duel's* player program, are designed to use exactly—or else just under—some multiple of 256 (\$100) bytes of memory. Apple's memory is divided into "pages," each of which is 100 hex bytes long (256 decimal). The memory addresses from \$800 to \$8FF, for example, are referred to as page 8, while the locations from \$9000 to \$90FF that contain our machine language program are on page 144, which is the decimal equivalent of \$90.

A word of warning: On 48K Apples, DOS begins at \$9600 (38400) and uses all of the remaining memory that's accessible to the user. Never put a machine language program above \$95FF or you'll clobber DOS and may be unable to use your disk drive until you reboot.

When you save a binary file, you also save on the disk its beginning address and length, and the file will automatically reload in exactly the same memory locations you saved it from unless you specify otherwise. Now, reenter the Monitor with *call -151*. Erase your program with

9000: 00 00 00 00, and make sure by listing it with 9000.9003. Load your file with the command *blood Test* and examine those four locations. They should contain your program.

Fortunately, you aren't limited to reloading a machine language program in the place from which you saved it. If you want to put your program on page 130 (beginning at \$8200 or 33280), you include the address information in your load command and type *blood Test,\$8200* (or *A33280*). There's no need to specify the length. After you've done this, either enter the Monitor or call 33280 to satisfy yourself that it worked.

Moving a machine language program, or any memory range, from one place to another by bsaving and bloading a file is probably the easiest way because you don't have to enter the Monitor. However, if you are in the Monitor anyway you can move memory around directly using the less than (<) sign and the letter M. To copy your program from \$8200-\$8203 to \$1000-\$1003, type (in the Monitor):

```
1000<8200.8203M
```

The destination comes first, followed by the current location. Note that the beginning and ending bytes must be specified here rather than the beginning byte and the length.

When you're using programs such as the two we've mentioned, you generally have to blood not only a picture-drawing or music-playing program but also one or more files containing the pictures to be drawn or the songs to be played. Then you have to be able to tell the drawing/playing program where in memory these files are.

Just for the sake of variety, instead of ringing the bell let's pretend that Applesoft's home routine, located at \$FC58 (64600), is a picture or music file and that our machine language program that calls it is the drawing or playing program. Enter the Monitor, examine locations \$8200 to \$8203, which is one place we know this program still is, and change \$8201 and \$8202 to 58 and FC respectively. If you type 8200G in the Monitor or return to Basic and type call 64600, your screen will clear and the cursor will go to the upper left corner. Since you've changed your machine language program, you need to save the new one on the disk in place of the old by again typing *bsave Test,\$8200,L\$4*.

Turn your machine off and on again so that you know that all memory has been cleared. Now enter and run this program:

```
10 D$ = CHR$(4)
20 PRINT D$;"BLOOD TEST"
30 CALL 33280
```

Your drive should come on and then the screen should clear as the home command is executed.

Here's how the program works. Line 10 lets the string variable D\$ become the same as control-D, which the computer understands as the number 4. (Remember, your Apple understands *everything* in numbers only.) Control-D is the indication to DOS to take what follows as one of its commands, rather than as an instruction to print something on the screen. The semicolon simply extends the print command to the next instruction, which is to load a binary file called Test. Since a binary file will load into the same memory location it was saved from unless you instruct otherwise, your machine language program is placed again in the first four bytes of page 130. The call command runs the machine language program at memory location 33280 (decimal) or \$8200 (hex).

There's only one thing left to do before we can write an Applesoft program that will poke the address of the home command into a machine language program. We must figure out how to take one decimal number and divide it into two decimal numbers whose hex equivalents, when combined into one hex number, will be the hex equivalent of the original decimal number.

Using, for example, the location of the home subroutine, 64600, we can first note that its hex equivalent is FC58. As we did previously, we will poke this into memory backward with 58 going into the lower byte and FC into the next higher one. For any decimal number, L, we get the decimal value for the low order byte from the formula:

$$L - (\text{INT}(L/256) * 256)$$

and that of the high order byte from the formula:

$$\text{INT}(L/256)$$

Using these formulas on 64600, we get 88 and 252 respectively. The hex equivalent of the latter is \$FC, while that of the former is \$58, which, when combined in correct order, becomes \$FC58.

Now, since you may be a bit confused by the fragmented instruction, let's do a Basic program from scratch that will clear the screen, ring the bell, and turn on inverse or flashing mode or whatever depending on what numbers you poke into the example machine language program. The only new command is the one in line 20 that tells DOS to display the input and output commands it receives from the program so you'll know what's going on. Type:

```
NEW
10 D$ = CHR$(4)
20 PRINT D$;"MON C,I,O"
30 INPUT "ENTER A DECIMAL ENTRY POINT";L
40 PRINT D$;"BLOOD TEST,$9000"
50 POKE 36865, L - (\text{INT}(L/256))*256
60 POKE 36866, \text{INT}(L/256)
70 CALL 36864
```

When you run this program, the binary file named Test, which contains your four-byte machine language program, will be loaded into locations \$9000 through \$9003 (36864-36867). The values in two locations in the program, \$9001 and \$9002 (36865 and 36866), are then changed to the hex numbers that can be combined to form the hex equivalent of the decimal number you'll enter from the keyboard when the input statement prompts you. When your Basic program calls your machine language program, it immediately jumps to the location you've poked into it and executes the machine language program it finds there.

When you first run the program, enter 64600, and your screen will clear. To make it do something else, let L equal the entry point for a different routine. Some of these for a 48K Apple are: turn on lo-res graphics, 62352; print a question mark, 56154; ring the bell, 64477; print inverse characters, 62071; print flashing characters, 62080; and return to normal characters, 62067. After being in flashing mode, you may have to return to ordinary text mode manually with the command *normal* from the keyboard before the program will run again.

Except for the location numbers, this is the program needed to use fully the graphics and music packages and a number of other packages as well. It's short, simple, and, when you know what you're doing, not nearly as frightening as it looks in the instruction manuals. ■

DON'T MISS OUT ON OUR SPECIAL OFFER... Scotch® QUALITY AT A BUDGET PRICE!



\$23.50

Owners of Apple and IBM personal computers deserve the reliability of **Scotch®** error-free performance when buying computer diskettes. Futra is now offering ten (10) **Scotch®** double density, single sided, soft sector diskettes with reinforced holes in a protective storage case for easy filing . . . for only \$23.50.

10 **Scotch®** double-sided diskettes w/protective storage case . . . **\$33.50**
Protective storage case only . . . **\$2.00**

Send your order to **FUTRA COMPANY**, P.O. Box 4380-ST, Torrance, CA 90510
MasterCard and Visa call (213) 328-9951 or 1-800-421-5006 (Outside CA)
Add \$1.50 handling per every 3 cases (or boxes of disks). CA residents add 6% (LA county 6.5%) sales tax. Continental USA orders only please.

"I Love To Drive My 380Z"

"...And I can drive it at 32 CPS with an Apple, Osborne, TRS 80 and others."

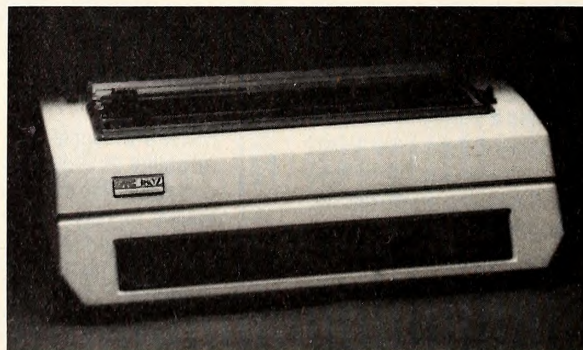
The DTC 380Z: A new standard in advanced technology at a dramatically low price

- 48K buffer for high speed throughput
- Diablo 1640/1650/630 software compatible
- Serial and parallel interfaces
- Serial baud rates to 19.2K
- Automatic baud rate selection
- Four CPU's, no cables, belts, wheels or pulleys
- Letter quality daisy wheel printer
- 12 print styles, 15 languages, 96 char. wheel, standard ribbon
- Automatic bi-directional printing
- Proven reliability 100,000 printer mechanisms produced
- Up to 32 CPS print speed in typical applications
- Interconnecting cables for all major micro-computers
- Automatic proportional spacing
- Parallel 6K bytes per sec. transfer rate
- Optional extras: forms tractor, cut sheet feeder.

MONEY BACK GUARANTEE

IN STOCK • ORDER NOW
VISA • MASTERCARD

800-962-8185
in CA 800-538-9294



The DTC 380Z
DAISY
Wheel Printer

\$**1359**⁰⁰

DTC Data Terminals & Communications
590 Division St., Campbell, CA 95008

SOFTCARD Symposium

by Greg Tibbetts



Welcome to Symposium for February.

Review. When we wound up our discussion last month, we had just finished describing in general the BIOS character I/O process. Before picking up where we left off, let's briefly review what we covered so it will be fresh in our minds.

As we discussed, BDOS communicates with the hardware by means of seven BIOS functions. These functions correspond to the seven character I/O routines in the BIOS—CONST, CONIN, CONOUT, PUNCH, READER, LISTST, and LIST. As far as BIOS is concerned, these seven routines represent only four logical devices; namely, Console, Punch, Reader, and List, which can be abbreviated CON:, PUN:, RDR:, and LST:

We learned that while BDOS only knows of four logical devices we can actually deal with more than four by having BIOS combine several physical device drivers into each of the seven logical device routines. To tell BIOS which physical device to access when each routine is called, we use the IOBYTE. We said that the *device mapping*, as the IOBYTE concept is referred to, can be altered by STAT and that BDOS is unaware of either the change in output or the current value of the IOBYTE.

Finally, we discovered that each BIOS character I/O routine determines the physical device driver routine to use by getting its specific two-bit field from the IOBYTE and decoding it. Based on the value found, the routine selects one of eleven vector addresses from the I/O vector table in the IOCB. Each table entry is the starting address of the actual physical device driver to be used. These vectors are the means by which you can modify the BIOS character I/O routines; this is done by changing them to point at your own drivers rather than at the standard drivers in the BIOS.

We discovered one negative element in all this. Of the eleven possible physical devices named in the system—TTY:, CRT:, UC1:, PTR:, UR1:, UR2:, PTP:, UP1:, UP2:, LPT:, and UL1:—only eight separate devices are allowed in SoftCard CP/M. This is so because three pairs of physical device names (TTY: and CRT:, UR1: and UR2:, and UP1: and UP2:) share the same vector and are therefore a single device. For purposes of simplification, we'll refer to these as TTY:, URx:, and UPx:, respectively.

There's one more thing before we proceed. A while back we discussed the patch area in the BIOS, which is mentioned in your SoftCard manual on page 2-18. This area is made up of three 128-byte areas of memory. The first one (0F200H-0F27FH) is for BDOS's LST: device, the second (0F280H-0F2FFH) is for the PUN: and RDR: devices, and the third (0F300H-0F37FH) is for the CON: device. (The SoftCard manual actually says TTY: instead of CON:, but TTY: is a physical device and these areas correspond to logical devices.)

The purpose of these areas is to provide you with protected space in which to install your own driver routines, alterations to BIOS operations, and other handy stuff. Actually, there's no real restriction on which areas are used for what device, since BIOS is not even aware of the areas' existence. There is a restriction, however, on part of the console patch area. In the last part of this area (from 0F34AH to 0F37FH).

Version 2.20B of the BIOS contains corrections for errors in CONST, CONIN, and CONOUT, the three console device routines.

Your usable space, therefore, ends at 0F349H. In the course of this next series of articles, we'll be pointing these patches out.

Enough of Old Stuff, On with the New. This month we'll begin looking in detail at the BIOS character I/O routines in order to find out how the various hardware devices are driven. We won't finish dealing with this subject in one column; two or more may not even be sufficient to cover it. Our approach, therefore, will be to go each month until we run out of space and then pick up the following month where we left off.

One word of warning here. Although no complete source code will be shown, addresses for some specific routines may be given. We aren't at a point yet, however, where you'll be given tested alterations and/or programs to remove and replace the system tracks of your disk. So if you decide to experiment, be sure you have backups of the disks you use. Although zapping a disk is not a common result of an error in the character I/O routines, when you're modifying code in the operating system, there's always that risk.

Our starting point this time will be the logical Console device routines. The Console device is used by BDOS for communication with the user, normally via the keyboard and the screen. Of the four physical device names that can be assigned to CON:, only two are actually physical devices. They are TTY: (remember, this is both TTY: and CRT:) and UCL: BAT:, as we said last month, simply assigns Console input to the logical RDR: device and Console output to the logical LST: device.

In SoftCard CP/M the TTY: device is implemented as the normal keyboard and screen and is the default IOBYTE assignment. UC1:, on the other hand, is the physical device that it's possible to implement as a special device driver of your own.

The TTY: device uses Console Input Vector #1 and Console Output Vector #1 in the vector table, while UC1: uses the #2 input and output vectors. Altering the #2 vector addresses, therefore, makes it possible to implement UC1: as a previously unknown device. Since the UC1: device is not implemented when the SoftCard is shipped, the #2 Console vectors have the same value as the #1 vectors. As shipped, then, UC1: operates just like TTY:; the reason for this is to prevent the system from hanging if the user should experimentally assign CON:=UC1: without having implemented it.

Since UCI: is reserved to be a user-defined device, the TTY: device drivers must be capable of handling all other Apple keyboard/display combinations, including both the standard Apple console (the forty-column display and the Apple keyboard) and such external console hardware as terminals, eighty-column cards, and so on. Therefore, regardless of what type of hardware you're using, all of your console I/O is being handled by the TTY: device drivers through the #1 Console vectors.

Obviously, this same driver can't handle both types of hardware. If nothing else, the addresses to operate a card in slot 3 differ from the addresses of the standard Apple keyboard and screen. It seems as though there must be some fancy footwork going on here, and, in fact, there is. It

happens during the BOOT process, and is performed by the initialization routines we discussed a couple of months ago in our series on the BOOT code. If slot 3 contains an eighty-column card, a serial card, or an Apple Communications card, then certain addresses in the TTY: device drivers in each of the three Console devices (CONST, CONIN, and CONOUT) are patched during BOOT to match the actual hardware that is present. As we'll see when we examine these routines, the addresses altered are those that point to the memory-mapped hardware area from 0E000H to 0EFFFH (6502 \$C000 to \$CFFF).

Setting up the TTY: device to handle both types of keyboard/screen combinations was a design choice. The CON: device could have been implemented so that TTY: was just the native Apple hardware and UC1: was any eighty-column device installed in slot 3. Had things been done that way, the user could have switched between the forty-column and eighty-column screens simply by changing the IOBYTE. Unfortunately, this would also have eliminated any chance for users to implement their own console devices, since both possible devices would have been used. User expandability was deemed more important than an easy ability to switch between screen formats; and, while doing the latter is not impossible, BOOT's alteration of the BIOS routines makes it difficult.

Let's take a look now at the various devices that the console service routines may have to deal with. Besides supporting the standard Apple hardware, SoftCard CP/M allows three additional console device interfaces—an eighty-column board, a serial interface, and the serial portion of an Apple Communications card. Since SoftCard CP/M requires that these devices be in slot 3, we can count on their access routines being in specific places. Also, since the eighty-column cards that are supported are, from the BIOS's point of view, identical to serial cards, we can treat them as serial cards for our purposes.

With those facts in mind, we now know that we need routines for Apple hardware, serial cards, and the comm card. Since we must test the status of, read from, and write to these cards, we know that we will need a total of nine actual hardware device drivers to accomplish the three console functions. We'll point these drivers out as we discuss the three routines.

The first console routine we'll look at is *console status*, which is known by the label CONST. The Digital Research criteria for CONST states that CONST's function when called by BDOS or another routine is to determine whether or not a character is ready at the physical device currently assigned to CON:. If a character is available, CONST is to return to the routine calling it (which is usually BDOS) with the value 0FFH in the [A] register. If a character is not available, CONST is to return to the calling routine, placing the value 00 in the [A] register. The physical device here is normally the keyboard; therefore, what CONST is usually doing is checking to see whether a key has been pressed since the last keyboard input was accepted.

As stated, we'll need to make allowances for all three types of devices, depending on whether a card is installed in slot 3 and, if so, what type it is. In the case of the CONST routine, the method for determining if a character is ready stays pretty much the same regardless of the kind of card that is or isn't in slot 3, but the addresses used are different. Let's look at how they differ.

As you can see from your Apple reference manual, the Apple keyboard indicates that a key has been pressed by altering the value in the memory-mapped hardware location known as the *keyboard strobe*. To the Z-80, the keyboard strobe is at memory location 0E000H. When a key is pressed, the parity bit of the keyboard strobe is set. (The *parity bit* on any eight-bit value is always the highest order bit; bit 7. To "set" a bit is to make it a 1; to reset it is to make it a 0. Simple, no?) Now, when the parity bit of an eight-bit number is set, the value of that number exceeds 127, since the binary number 10000000B is 128. What we are checking to see, therefore, is whether the keyboard strobe value exceeds 127.

A similar process occurs when a card in slot 3 has a character available. Both serial and comm card interfaces also set a bit in one of the bytes in their address space (for serial cards, this is the parity bit; for comm cards, it's bit 0). The address of the byte altered will actually correspond to one of the card's data or strobe registers, rather than to memory.

Each slot on the Apple has two areas of address space assigned to

it—a scratchpad space of sixteen bytes between 0E080H and 0E0FFH and a 256-byte page of space between 0E100H and 0E7FFH. The scratchpad space, normally used for hardware registers or strobe locations, is set up so that for slot n the space is 0E0x0H–0E0xFH where $x = n + 8H$ (for slot 3, $x = 0BH$). The page of space, usually used for ROMs on the card, is set up so that for slot n the space is 0E7x0H–0E7xFFH.

With both types of interfaces we're looking at here, the strobe register also called control register, is in fact in the scratchpad space—0E0BEH, to be exact. CONST must therefore check 0E000H for Apple hardware and 0E0BEH for external console devices, such as serial cards and comm cards. It must check the parity bit for Apple hardware or serial cards and bit 0 for comm cards.

CONST accomplishes this by means of two subroutines, one at 0DBOCH (labeled CONST1), which is part of the character I/O routines, and the other at 0F34AH (labeled STSPAT), which is one of the version 2.20B corrections mentioned earlier.

The STSPAT subroutine corrects a problem with comm cards wherein the parity bit was being read in place of bit 0. The correction was implemented by installing STSPAT in the patch area and changing the Console Status Vector address (in the vector table) to be the start of STSPAT rather than the start of CONST1. Since the CONST routine's first activity is a jump to the address contained in this vector, control always goes to the correction first.

STSPAT solves the problem by checking the slot table to see if a comm card is installed. If a comm card is found, STSPAT loads the card's status byte (0E0BEH, remember?) and checks to see whether bit 0 is set. Based on the result, STSPAT makes the value in the [A] register either 0FFH or 00 to fulfill the BDOS criteria and then returns directly to BDOS.

If no comm card is found, control goes to CONST1, where a status byte is loaded. The address of the status byte is the one that BOOT alters during the initialization process. The address starts out at E000H and is changed to 0E0BEH if any card is found in slot 3.

CONST1 checks the status byte for a parity bit. Just like STSPAT, CONST1 alters the value of [A], depending on the result, before returning to BDOS. And that's all there is to CONST.

The second routine we'll talk about is CONIN. It's considerably longer and somewhat more complex than CONST but certainly no harder to understand.

The CP/M design criteria indicates that when CONIN is called it must not return until it has received a character from the current console device. When it has gotten the character, it must place it in the [A] register and reset the parity bit. This resetting of the parity bit is CP/M's way of ensuring that ASCII character data won't be misinterpreted in future transfers or internal operations, since all ASCII characters can be represented by the seven low-order bits.

Like CONST, CONIN must also be capable of dealing with all three types of hardware. This is accomplished in the same way in CONIN as it is in CONST; BOOT alters an address in the TTY: driver. Unlike CONST, CONIN has more than one function to perform, however. First, it must get the character of input; second, it must check to see if this is a character the user wishes to have redefined. This keyboard redefinition is mentioned in your manual on page 2-17. To get the input, CONIN calls a subroutine at 0DB50H (labeled CNIN2) that actually reads the character. Then, when control returns to CONIN, any necessary redefinition will be done. Let's examine the character input function first.

It is CNIN2 that looks at the IOBYTE and decides which device driver is to be used. It is important to note that CNIN2 was called and not jumped to, meaning that, regardless of which driver is used, control will eventually return to CONIN. CNIN2 first checks its field of the IOBYTE (bits 0 and 1), which will indicate TTY:, UC1:, or BAT:. We'll look first at BAT:.

If batch mode is in effect, the CP/M design criteria dictates that it is supposed to get its input from whatever physical device the logical reader device is attached to. To do this it should jump to the READER routine, where the reader bits of the IOBYTE could be checked to see which physical reader device (TTY:, RDR:, or URx) is in use. Instead, how-

IN THE TOUGH WORLD OF SMALL BUSINESS THE GENERAL LEDGER CAN MAKE YOUR APPLE™ SHINE.

The General Ledger from National Software gives you more management power than any software in its class. That can give you the edge you need to outshine the competition.

The General Ledger can produce many times more reports than competing systems—up to 289 unique Profit & Loss Statements daily if you choose.

MEETS THE DEMANDS OF YOUR BUSINESS.

The General Ledger simultaneously addresses: general ledger requirement (IRS, etc.), product profitability analysis with automatic proration of overhead burdens, financial budgeting, forecasting and modeling, automatic depreciation scheduling and posting, and instantaneous on-demand inquiry. With the General Ledger, two accounting months can be "open" simultaneously, and a full year's detailed entries can be retained on current file.

The General Ledger lets you describe your vision of the environment, emphasizing marketing, operations, etc. You can even describe your environment emphasizing one aspect, re-organize to emphasize another, produce management reports, and then—if you like—switch back to your original profile.

All this is done within an integrated, logical

universe that, as a side benefit, will improve the skills of your bookkeeper.

THE GENERAL LEDGER IS SOPHISTICATED ENOUGH TO MEET ALL YOUR NEEDS.

The General Ledger stores many times more entries than competitive systems. It has multiple techniques for most functions—you can use one, or all four methods, to post entries. And The General Ledger is extremely efficient. One test closed one day's 3,440 entry-sides in 2½ minutes!

THE GENERAL LEDGER GROWS WITH YOU.

The General Ledger is so versatile it can be operated at a minimal skill level. As you become more familiar with the system, you simply move from one level to the next until you master all of its advanced features. And, as your business's needs change, The General Ledger can change with you.

Now you don't have to settle for the limited capabilities of other ledger software because you can have The General Ledger. For more information, see Your Apple™ Dealer or contact, The National Software Company, Chamber of Commerce Building, Suite 105, Baltimore MD 21202
(301) 539-0124.

THE GENERAL LEDGER

by Acumen, Inc.
for Apple II/Apple II Plus DOS 3.3
(floppy disk) 48K RAM Printer.
Distributed exclusively by Eastern Software Distr., Inc.
Dealer inquiries welcome.

Apple and Apple II are registered trademarks of Apple Computer, Inc.

ever, BAT: jumps to the address contained in Reader Input Vector #1 (in the vector table). That address corresponds to the physical RDR: device driver, and, consequently, batch mode input will only come from this device. (This is a bug that can be fixed easily, but rather than take time to do that now we'll come back to it later on.) If batch mode is in effect and the jump to the RDR: device driver takes place, the flow is identical to the flow that occurs through the READER routine, so we'll leave it until our later discussion of READER and move on to what CNIN2 does for TTY: and UC1:, the other two physical Console devices.

If the IOBYTE isn't set for batch mode, CNIN2 checks it for the value of either TTY: or UC1:. For TTY:, CNIN2 jumps to the address contained in the #1 Console vector, while for UC1: it jumps to the #2 vector address. The #1 vector should contain the start address of the TTY: device driver TTYIN1 at 0DB29H. However, another 2.20B correction made it necessary to change this address to 0F358H, which is the address of INPPAT, the second correction routine in the patch area.

The INPPAT routine was installed to correct the problem of the parity bit not being reset if the character came from a device in slot 3.

Unlike STSPAT, which may never execute the standard driver, INPPAT calls TTYIN1 itself to get the character. When the character comes back, INPPAT simply resets the parity bit before returning control to CONIN.

Earlier we said that UC1: and TTY: have the same function when the SoftCard is shipped. In the case of version 2.20B, this is not technically true. While both devices use TTYIN1, INPPAT's starting address was only placed in the #1 vector and not the #2, meaning that UC1: is prone to error. But, since you won't be seriously using UC1: without altering the vectors yourself, this shouldn't be a problem. In either case, then, TTYIN1 is the device driver used to get keyboard input. As such, it is the driver modified by the initialization routines during BOOT.

When it executes, TTYIN1 sets a register equal to the console device slot, slot 3, and then ordinarily jumps to a routine called RDKB at 0DB2FH. That address is changed by BOOT, however, if there's a usable card in slot 3. In that case, BOOT identifies the card as either a serial card or a comm card and changes the address TTYIN1 jumps to—either to RSER at 0DD1CH, the address of the serial read routine; or to RCOM at 0DD12H, the comm card read routine. Let's examine these three routines in order.

The routine RDKB is reasonably short. Obviously, since the Apple hardware is in use, RDKB ignores the slot 3 value in the register. The routine loads the keyboard strobe value from 0E000H into register [A] and checks for a keypress by testing the parity bit, just as CONST did. If the parity bit is clear, RDKB keeps looping (reexecuting that same code) until a key is pressed. Once the parity bit has been set, RDKB knows a key has been pressed so it clears the keyboard strobe by writing a value into address 0E010H. This address is another register in the scratchpad space that, when accessed, tells the Apple hardware to clear the parity bit at 0E000H. This process works with any value written to 0E010H, since the write itself is all that is required.

RDKB uses the value it just loaded into [A] from the keyboard strobe. This value is also the character just typed in at the keyboard, since the keyboard strobe serves two purposes—it indicates that a key is pressed and contains the character value in the lower-order seven bits. Once the strobe has been cleared, the parity bit of the character value in [A] is reset in accordance with BDOS criteria and an RET instruction is executed, returning control to INPPAT.

RCOM operates in much the same way as the RDKB routine. All accessing of data is done by dealing only with the hardware registers in the scratchpad space.

The hardware status register (which is similar to the keyboard strobe) is, as we already know, at 0E0BEH for a comm card in slot 3. Unlike the keyboard strobe, however, the status register doesn't contain the character itself. The character is stored in a separate data register situated one location beyond it at 0E0BFH. RCOM, then, waits for a character by continually checking the status register's bit 0 and looping until this bit is set. When that occurs, which means that a character is ready, RCOM reads the character from the data register into register [A] and returns to INPPAT.

RSER obtains its character in a different way than the other two rou-

tines do. Because getting a character from either a serial card or an eighty-column card is a more complex undertaking, RSER performs its function by calling the input routine that's contained in ROM on the card itself. Since this ROM contains 6502 code, RSER must activate the 6502 and allow it to make the call. The address to call is the same whether the card is a true serial interface or an eighty-column card looking like a serial interface.

Both types of cards use something that is known colloquially as a C800 ROM. What this means is that these cards require more ROM space than the 256 bytes allotted to them in their memory-mapped I/O space. This possibility was allowed for when the Apple was designed by making the last half of the I/O space—from 6502 \$C800 to \$CFFF—an area to be shared by all the cards. To make use of this area of memory, a card must first stop any other card from using it and must then activate its own use of the area. This process is known as *disabling* and *enabling* the C800 ROM.

A card that wishes to use the shared memory area disables the C800 ROMs of all other cards by reading address \$CFFF and enables its own by accessing location \$CFFF, its first ROM address. Besides the C800 ROM activity, certain memory addresses that the serial card input routine will use must be initialized. Known as *temporaries*, these addresses are in the 6502 page zero and are used by the ROM to get the value to be sent to the card or to store the value that is read from it. RSER performs these tasks by calling SER1, a setup subroutine at 0DCEEH.

SER1 uses the register containing the slot number to calculate the addresses it needs to do the initializations. Once that's been accomplished, SER1 returns control to RSER, which enables the 6502 and calls the serial card ROM input routine at \$C84D. When control returns to the Z-80 and RSER, RSER loads the newly read byte of data from the page zero temporary at location \$678 + *n*, where *n* = slot number = 3. It then returns to INPPAT.

Now that we've covered these three read routines, it's important to note that RDKB won't be encountered again, since no other BIOS routine uses it. RSER and RCOM, however, are used by other device drivers to get and send data to serial and comm cards in other slots. This is why these routines need the slot number and don't simply assume the use of slot 3. In any case, when we encounter RSER and RCOM in other device drivers, we'll only reference them by name and won't cover them in detail again.

To finish our discussion of CONIN, we have just returned to INPPAT from one of our three driver routines. If we got the character from RSER or RCOM, its parity bit won't necessarily have been cleared. We don't want those two routines to clear the parity bit automatically because, in some cases, other devices using the routines may require the parity bit to be set for data verification.

INPPAT then, finishes the function of getting the character by clearing the parity bit and returning to CONIN. It is at this point that CONIN checks for and performs any keyboard redefinition the user has called for. In the SoftCard manual, the redefinition table is mentioned as being made up of six two-byte pairs, with the first byte being the character you wish to alter and the second being the character you wish to substitute for the first one. CONIN accesses this table now, checking the character it has just received against the first character of each of the two-byte pairs. If no match is found by the time CONIN reaches the end of the table (designated either by six pairs of bytes being examined or by a 0FFH value in the first byte), it returns to the program calling it (usually BDOS) with the character it received, as is, in register [A]. If, on the other hand, a match is found, the second character byte from that entry in the table is loaded into [A] and CONIN returns with that character instead.

This completes our discussion of the CONIN function.

The final console driver routine is CONOUT. It is by far the most complex of the driver routines, since it must handle not only straight character data but also all the screen functions, such as homing the cursor, clearing the screen, and so on. We'll defer our discussion until next month. At that time, when we finish talking about the console I/O routines, we'll also provide the correction we mentioned (to ensure that the logical READER routine and not the physical RDR: device is used during batch processing). Until next month. . .

EXPAND-A-RAMTM

More memory for APPLE IITM...
the smart way.



Need more memory for VisiCalc*?
Like to have an 80 column VisiCalc display? Then, you're ready for the complete SPECIAL PAK EXPAND-A-RAM with VC-Extender.

This package allows you to utilize the extra memory on EXPAND-A-RAM for larger VisiCalc worksheets and expand from 40 to 80 columns. It includes a special command that enables you to transfer large worksheets between memory and disk very quickly—a real time saver.

You get much more. There's MEMORY MANAGEMENT SYSTEM which relocates DOS so you have more free memory in BASIC for large BASIC programs. And, there's RAM TEST and UTILITY FUNCTIONS. Plus, you get RAMDISK emulators for APPLE DOS, APPLE PASCAL, and CP/M. It's a software package that

emulates a standard Apple floppy disk drive but is 2 to 10 times faster—very handy for word processing applications like WORDSTAR.

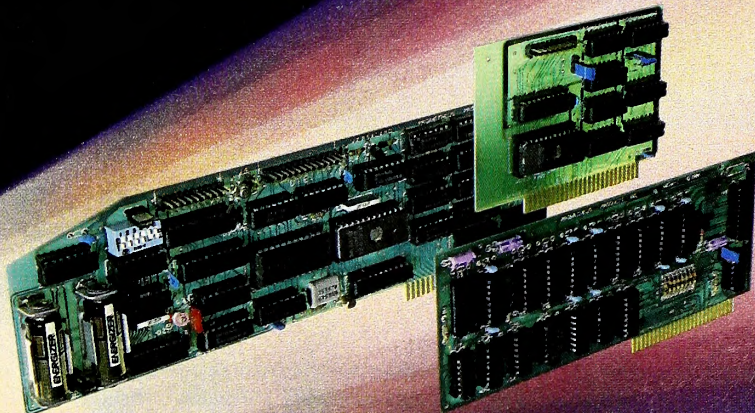
EXPAND-A-RAM plugs into any slot. Unlike other memory expansion cards that were designed to function as solid state disks, EXPAND-A-RAM works with the many software programs that use 16K of RAM in slot 0—including CP/M, APPLE PASCAL, LISA, MERLIN... and many others. No modification of your Apple II is required.

Suggested retail prices for SPECIAL PAK EXPAND-A-RAM with VC-EXTENDER are \$475 for 64K and \$595 for the full 128K version. Without VC-EXTENDER they are \$425 and \$550.

You can start with the basic 16K EXPAND-A-RAM for \$225 and then expand to 32K, 64K, or the full 128K as needed by adding 16K or 64K memory chips and the software later. There are a number of options. See your local dealer for details. It's the smart way to handle your memory expansion.

*VisiCalc is a registered trademark of VisiCorp.

Apple II is a registered trademark of Apple Computers, Inc.

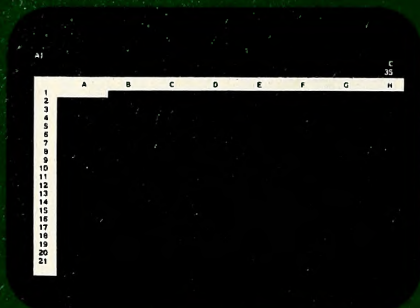


PROMETHEUS

PROMETHEUS PRODUCTS INCORPORATED

45277 Fremont Blvd. • Fremont, CA 94538 • (415) 490-2370

VISICALC*



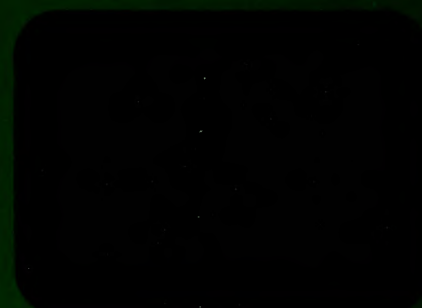
INTERACTIVE ELECTRONIC
WORKSHEET

YES



ON-LINE REFERENCE GUIDE

NO



"NAMING" OF CELLS
OR AREAS

NO



PLAIN ENGLISH PROMPTS

NO



INDIVIDUAL COLUMN
WIDTHS

NO



EXTENSIVE FORMATTING
CAPABILITIES

NO



PROTECTED CELLS

NO



MULTIPLE, LINKED
WORKSHEETS

NO



SORTING CAPABILITY

NO

VisiCalc[®] was a swell idea for then.

The next generation. First generation electronic worksheets were a good idea. They were early software management tools that could eliminate a lot of hours with a spreadsheet, calculator, pencil and eraser. Enter Multiplan, the next generation electronic worksheet that's as easy to use as it is useful.

Make comparisons. Compare Multiplan to any of the earlier electronic worksheets. We've given you some "prompts" above.

Compare learning time. Multiplan's tutorial book brings you up to speed. Fast. But Multiplan doesn't stop there. Multiplan's On-line Reference Guide gives you instant help if you have questions. It knows where you are in Multiplan and offers information related to your problem, right on the screen.

Compare ease of use. All Multiplan prompts are full length words or phrases. And Multiplan provides "naming," the ability to assign a plain English name to any

cell or area. "Gross Profit = Sales—Cost" rather than "AA44=AZ23—BK154." Which means you can work more intuitively. And faster.

Compare utility. Multiplan lets you link related worksheets so that information is transferred between them automatically. For instance, you can keep regional sales forecasts on separate sheets but link them with your overall company forecast. Then, just change the forecast for any region, and the company forecast sheet is updated automatically. Something you can't do with first generation worksheets.

Compare reports. Not just the work you can do, but the way you can present it. Multiplan's flexible formatting options allow you to produce presentation-quality reports. And its sorting capability lets you sort by either alphabetic or numeric order. So a sales manager who normally lists sales regions alphabetically could sort by amount sold and conveniently rank by sales performance. The

*Based on features in releases VC:202B0-AP2 and VC:156Y0-IBM of VisiCalc on the Apple II and IBM-PC respectively.

MULTIPLAN

**NOW AVAILABLE
FOR THE IBM
PERSONAL COMPUTER**

```

1 1 2 3 4 5 6 7
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
COMMAND Alpha Blank Copy Delete Edit Format Goto Help Insert Lock Move
Name Columns Print Quit Sort Transfer View Window
R1C1 100% Free Multiplan: PROFIT1
  
```

COMMAND OVERVIEW

The Multiplan worksheet consists of a grid of up to 63 columns in width and 255 rows in length. The screen has one or more windows into the worksheet, and an area showing command, message and status lines. The message line suggests the action to be taken or explains errors when they occur. The status line displays coordinates of the active cell, its contents, percentage of storage remaining, and worksheet name. There is a neighborhood active cell on the worksheet. The highlight can be moved around by pressing the direction keys. The same keys are also used for scrolling the contents of windows. The Ctrl-Polp keys may be used to go to row 1 column 1 quickly.

The command menu offers a choice of commands. To get going, you need to:

1. Select an active cell. The direction keys may be used.
2. The same keys also scroll the worksheet in the window.
3. Select a command. There are two ways to do this. You can move the highlight to a command word using the F8 and F10 keys and then press (Enter) or type the first letter of the command.

Multiplan: PROFIT2

```

1 2 3 4 5 6
2 Jan
3 Feb
4 Mar
5 Apr
6 May
7 Gross Profit
8
9 Cost
10
11
12
13
14
15
16
17
18
19
20
VALUE: Sales - Cost
Enter a formula
R1C2
  
```

**INTERACTIVE ELECTRONIC
WORKSHEET**

YES

ON-LINE REFERENCE GUIDE

YES

**"NAMING" OF CELLS
OR AREAS**

```

1 1 2 3 4 5 6
2 Region 1 Profit Forecast
3
4 Jan Feb Mar Apr May
5
6 Sales 2000
7 Cost 1300
8
9 Gross Profit 700
10
11
12
13
14
15
16
17
18
19
20
COPY RIGHT number of cells: 11 starting at: R7C2,R12C2
Enter reference to cell or group of cells
R1C2 Sales - Cost 90% Free Multiplan: PROFIT4
  
```

```

1 1 2 3 4 5
2 Region 1 Profit Forecast
3
4 Jan Feb Mar Apr
5
6 Region 1 Sales 2000 2200 2400 2600
7 Region 1 Cost 1300 1400 1500 1700
8 Region 1 Gross Profit 700 770 847 931.7
9
10
11
12
13
14
15
16
17
18
19
20
FORMAT WIDTH in chars or defaults: 25 column: 1 through: 1
Enter a number, or 0 for default
R1C1 97% Free Multiplan: PROFIT5
  
```

```

1 1 2 3 4 5
2 Region 1 Profit Forecast
3
4 Jan Feb Mar Apr
5
6 Region 1 Sales $2,000.00 $2,200.00 $2,400.00 $2,600.00
7 Region 1 Cost 1,300.00 1,400.00 1,500.00 1,700.00
8 Region 1 Gross Profit $700.00 $770.00 $847.00 $931.70
9
10
11
12
13
14
15 Growth Rate = 10.0%
16 Cost Factor = 65.0%
17
18
19
20
FORMAT OPTIONS commas: Yes No formulas: Yes/No
Select option
R1C1 97% Free Multiplan: PROFIT6
  
```

PLAIN ENGLISH PROMPTS

YES

**INDIVIDUAL COLUMN
WIDTHS**

YES

**EXTENSIVE FORMATTING
CAPABILITIES**

YES

```

1 1 2 3 4 5
2 Region 1 Profit Forecast
3
4 Jan Feb Mar Apr
5
6 Region 1 Sales $2,000.00 $2,200.00 $2,400.00 $2,600.00
7 Region 1 Cost 1,300.00 1,400.00 1,500.00 1,700.00
8 Region 1 Gross Profit $700.00 $770.00 $847.00 $931.70
9
10
11
12
13
14
15 Growth Rate = 10.0%
16 Cost Factor = 65.0%
17
18
19
20
LOCK FORMULAS
Enter Y to confirm
R1C1 97% Free Multiplan: PROFIT7
  
```

```

1 1 2 3 4 5
2 The Company Sales Forecast
3
4 Jan Feb Mar Apr
5
6 Region 1 Sales $2,000.00 $2,200.00 $2,400.00 $2,600.00
7 Region 2 Sales $1,800.00 $2,118.50 $2,362.13 $2,633.77
8 Region 3 Sales $1,000.00 $1,180.00 $1,368.00 $1,560.00
9 Total Company Sales $4,800.00 $5,518.50 $6,130.13 $6,763.77
10
11
12
13
14
15
16
17
18
19
20
EXTERNAL COPY from sheet: Region 3 to R1C2
Enter name an external sheet
R1C2 97% Free Multiplan: SALES
  
```

```

1 1 2 3 4 5
2 The Company Sales Forecast
3
4 Jan Feb Mar Total
5
6 Region 1 Sales $2,000.00 $2,200.00 $2,400.00 $6,600.00
7 Region 2 Sales $1,800.00 $2,118.50 $2,362.13 $6,280.63
8 Region 3 Sales $1,000.00 $1,180.00 $1,368.00 $3,548.00
9 Total Company Sales $4,800.00 $5,518.50 $6,130.13 $16,328.63
10
11
12
13
14
15
16
17
18
19
20
SORT by column: 4 between rows: 7 and 13 order: 1
Select option
R1C1 98% Free Multiplan: SALES
  
```

PROTECTED CELLS

YES

**MULTIPLE LINKED
WORKSHEETS**

YES

SORTING CAPABILITY

YES

MULTIPLAN™ is a great idea for now.

result is a more meaningful and useful presentation of data.

Compare availability. With Multiplan, you're not limited to a single range of computers. Multiplan is available for Apple® and for microcomputers that run MS™-DOS, XENIX™, or CP/M-80® operating systems. Multiplan supports both 40- and 80- columns on the Apple II.

Compare the source. Microsoft was the world's first microcomputer software company. Today, Microsoft software is running in well over a million installations, worldwide. Languages. Utilities. Business programs. All, maintained at the state-of-the-art.

Compare for yourself. Drop into your computer store. Compare Multiplan's powerful, user-oriented features to any electronic worksheet on the market. If you've been using VisiCalc, Multiplan's ability to directly utilize your VisiCalc files lets you easily upgrade to Multiplan. And that's just another of the many features designed

to make Multiplan the electronic worksheet for now. And years from now.

BETTER TOOLS FOR MICROCOMPUTERS

MICROSOFT®

Microsoft is a registered trademark, and Multiplan, XENIX, and MS are trademarks of Microsoft Corporation.

VisiCalc is a registered trademark of VisiCorp.

CP/M-80 is a registered trademark of Digital Research, Inc.

Apple is a registered trademark of Apple Computer, Inc.



Some Computers Shoot Electronic Arrows



BY MATTHEW YUEN

Clark's not the shy type. When he makes a move for a young lady, he aims straight for the heartstrings.

To: Linn842

From: Clark347

Subject: Us

Hi, Linn! Do you like Long Island Iced Teas? How about evening drives on the beach? Or maybe just the two of us spending the weekend at the Riviera? Sound good? If so, drop me a note in my mailbox, and we can arrange a rendezvous.

Linn's the romantic type. Sipping drinks on the back porch of a beach house, cruising down the beach in a Maserati, and flying to the French Riviera are just her bag. She's one high-class lady.

To: Clark347

From: Linn842

Subject: Yes!

Oh, Clark, you really know how to treat a lady. I just read your letter, and everything sounds great—especially the Riviera! Of course, we don't

have to do all this at once; let's spread it out. What shall we do first?

Time Is on My Side. At last, Clark has found himself a mate. After days turning to weeks, weeks turning to months, his patience has paid off. Look out, Linn, here comes a man whose generosity knows no bounds.

To: Linn842

From: Clark347

Subject: It's a date.

Right on! I was so glad to see your letter in my box today. I really don't care what we do first. I just received a whole box of instant iced tea from my cousin in Long Island. My '73 Toyota will handle the beach, but you'll have to bring gas money.

And I'm glad to hear you like the Riviera. What say we plan for next weekend there? The Riviera Trailer Town is in Fairdale, just a two-hour drive from here. There are bowling alleys, duck farms, and really keen rust museums nearby. We'll have a swell time. When should I pick you up?

Before hanging up his modem, Clark decided to glance through the

public message section of the bulletin board service he was on, the same one on which he had just made a date with Linn.

Hello, Dolly! That's the latest in the continuing story of Clark and Linn. The initial meeting and everything else in between all took place during the past few months. The funny thing is, Clark and Linn have never actually met. They "met" on a bulletin board service (BBS) through the miracle of modem. But it's not just your ordinary BBS.

This one's called Dial-Your-Match, from Matchmaker Enterprises.

Based in Burbank, California, Dial-Your-Match was born not quite a year and a half ago. Today, there are more than a dozen of them operating across the country and even one in France.

You connect yourself to Dial-Your-Match the same way you would to any other BBS; just dial the telephone number with a modem. But that's where the similarities end. True, there are the public message board and electronic mail functions that you find on most other BBSs, but it's how they're used that makes the difference.

Dial-Your-Match has only one purpose—to get people together. Though its name implies that this is a computer-dating service, it can also be used as a way to begin pen-pal relationships or special interest groups. But almost any user of the system will tell you that he or she is there to pep up the old social life.

Bewitched, Booted, and Bewildered. To find out more about Dial-Your-Match, let's go back a few months and see how Clark and Linn first got together.

When you first log onto the system, the first thing you have to do is fill out a questionnaire. After asking your name, city, and state and a brief physical description of yourself, the questions range from "What type of music do you enjoy most?" to "What kind of relationship are you looking for?" Don't worry; it's a multiple-choice questionnaire, so if you're stuck for answers you get to pick.

Once Clark has answered the twenty or so questions, his questionnaire is filed to disk and he is assigned a password and address code. The address consists of his name (or handle) followed by two to four numbers. For instance, if Clark prefers to be called Clark, his address code might be "Clark347." On the other hand, Doug is rather shy, so he enters "Big-D" as his handle and becomes Big-D771.

The password allows you to log on without having to fill out a questionnaire each time. It also ensures that only you can read the mail that's addressed to you. Upon entering your password, Dial-Your-Match updates the logbook and then immediately lets you know whether or not you have mail waiting.

Clark is now in the Matchmaker's den. For first-time callers, the most obvious command to use is Matchmaker, make me a match. The match command will match Clark with other callers in the "date-a-base." Dial-Your-Match searches through every other person who has called the system in its attempt to find the perfect match, beginning with the caller who logged on the system the earliest. When it finds a compatible match, it prints out the address code, percent match-up, age, state, and sexual preference of that person.

Clark now has a list of prospective matches. Next, he can use the browse command to look at their questionnaires to see how they answered each question. Does she smoke? Does she like classical music? What are her favorite hobbies? It's all there at the press of a key. Browsing the questionnaires of potential matches will tell you how many times they called, how many days ago they called last, and how many vacant mail slots they have. From this information, you can figure out whether or not the person you're interested in is an active caller or one who called just a few times and not much else after that.



Please Allow Me To Introduce Myself. If Clark finds someone who looks interesting, it's up to him to let his presence be known. Linn842 looks pretty compatible. The most logical way to contact her is to send her a private letter. Dial-Your-Match first checks her mailbox to see if there are any open slots for his letter.

Each user is given five mail slots. When those are filled, that person cannot receive any more mail until he or she reads and deletes the letters that are there. If you're attempting to send a letter to someone whose mailbox is full, the message "Sorry, Gail already has five letters" appears.

Seeing that Linn has one more open slot, Clark sends her the following letter:

To: Linn842
From: Clark347
Subject: Hello!

Greetings from northern California! I recently read your questionnaire after being matched with you 74 percent, and I would like to talk with you. I



don't know whether or not you have read my questionnaire. If you haven't, please do so and decide if you want to talk. I'm twenty-three, single, and have brown hair and brown eyes. I'm 5' 9" and 160 pounds. Palo Alto is a few miles north of San Jose. Hope to hear from you soon. Clark347.

The next time Linn calls up, she will be able to read her letters, Clark's among them. But suppose Linn didn't have any free mail slots. Clark could wait and call back a few days later and hope that by then she would have cleared her mailbox, but he doesn't have to.

The public message board is where callers can leave messages for the general public. Messages range from discussion of singles' activities to jokes. David644, for instance, keeps the general public aware of what's happening on *Late Night with David Letterman*:

The best way to find out more about Dial-Your-Match is to call one up and log on. Here's a list of currently operating boards.

DYM#1	Burbank, CA	(213) 842-3322
DYM#3	Savannah, GA	(912) 233-0863
DYM#4	Sherman Oaks, CA	(213) 783-2305
DYM#6	Fairbanks, AK	(907) 479-0315
DYM#9	Tarzana, CA	(213) 345-1047
DYM#10	San Francisco, CA	(415) 566-9927
DYM#11	Glendale, CA	(213) 242-1882
DYM#12	Houston, TX	(713) 556-1531
DYM#14	Cranford, NJ	(201) 272-3686
DYM#16	Vancouver, WA	(206) 256-6624
DYM#17	Daly City, CA	(415) 991-4911
DYM#18	Lynnfield, MA	(617) 334-6369
DYM#19	Santa Monica, CA	(213) 390-3239
DYM#20	Cary, NC	(919) 362-0676
DYM#21	Freeport, NJ	(201) 462-0435
DYM#24	Houston, TX	(713) 783-4136
DYM#25	Burbank, CA	(213) 842-9452
DYM#26	Clovis, CA	(209) 298-1328
DYM#27	Marseille, France	33-(91) 91-06-60
DYM#28	Sun Valley, CA	(213) 764-8000

To: All

From: David644

Subject: David Lettermaniacs

Hey, did everybody see the elevator races on *Late Night*? And what's happened to good ole Bud Melman? Don't miss Wednesday's installment of *Stupid Pet Tricks*; it's sure to be a hit. See you all, David644.

I Saw It in the Want Ads. But the most frequent use of the board is for people to advertise themselves. On it, you might see "Chicago man looking for outgoing females in the same area to go dancing with," or "Anybody out there from Maryland? If so, let's communicate!" or "Marian563, please empty your mailbox so I can write to you!"

Private mail is stored as one gigantic text file, taking up a whole disk. Public messages, questionnaires, and the user log are all on a separate disk. With more than six hundred users on the date-a-base at one time, all sending mail and posting messages, storage space is quickly taken up. To remedy this, Dial-Your-Match limits the public board to one hundred messages at a time. As soon as a hundred messages are posted, the next one will be written over the oldest one on the disk. In other words, messages will number from one to a hundred, from two to a hundred and one, and so on.

The same sort of overwriting procedure keeps the number of users at its maximum. There is space on disk for 768 users. As soon as the 769th new user calls, he will take the place of the person who hasn't called in the longest period of time, which is usually about a month.

Finally, if you have nothing else to do while on-line, you can always chat with the Matchmaker. In the chat mode, you can communicate live with the Matchmaker, tell jokes, shoot the breeze, or do whatever suits your fancy. The chat command pages the Matchmaker with a few bells for about thirty seconds. If the Matchmaker isn't around, the caller will see the message, "Sorry, the Matchmaker isn't in right now."

I Can't Get No Satisfaction. Dial-Your-Match debuted in October 1981, the brainchild of graphics programmer Gregg Collins. "The idea came to me when I first got my modem. I bought my Apple as a toy to play games with, and calling up bulletin board services was fun, but they all offered the same things," Collins recalls.

Tell HIM it's a game...

Trusty bow in hand, you make your way across the ice slick battlefield. Before you loom the ice pits: jagged holes which spew forth the most grotesque collection of creatures this side of a nightmare. They are as dangerous as they are ugly... and there are hundreds of them. But this is the easy part; because below you, in his icy kingdom, the High Master waits...

Ice Demons, a new original arcade style challenge for the Apple II or II Plus.

64 individual high scores and names kept.
Graduated levels of difficulty.
All standard convenience controls: Pause
game, Sound on/off, Game restart.
Music, Sound effects, Full color hi-res.

Features: 3 modes of play

- 1 Player solo
- 2 Player team
- 2 Player competition

For Apple II or II Plus,
48K, DOS 3.3

Ice Demons — only \$29.95

CA residents add 6% (\$1.80) sales tax

Morningstar • 39 Florence St.
San Francisco, CA 94133
(415) 441-2535



Apple is a reg. trademark of Apple Computer Inc.
Ice Demons is a trademark of Morningstar.
Ice Demons, © 1982 by Morningstar, all rights reserved.

We accept MasterCard, Visa,
Check or Money Order.
Dealer inquiries invited.

"Whenever you scanned the public board, it was always 'RAM card for sale, \$75,' or 'Clock card and disk drive for Apple II; must sell,' or 'Anybody have a color CRT for sale?' If you ever saw someone of the opposite sex, you didn't know where she lived, how old she was, or anything like that."

The format of BBSs was simple enough, but the information was boring. That's when Collins got the idea to have people fill out questionnaires when they logged on. But then, if they're going to do that, why not match them up?

"It seemed like a good idea, but it didn't start out the way it is now," says Collins. The first version had no public message board, and you were only allowed to match to one person. The program would assign you a romance mate, and you were stuck. If that person didn't like you, he or she would disconnect you, and the next time you called you were greeted with a cold, yet direct, message: "Your romance mate has rejected you." Ouch.

Later, Collins thought of matching people up with several others and letting them pick. But then he reasoned, "No, that would be two-timing; they should be allowed only one at a time." Finally, he just junked the whole program and started over from scratch.

The later version is the current version, with minor changes. When trying to construct a match, the first thing the program does is look at the person's sexual preference and then eliminate those who cannot match this person.

"I have what I call my Unpatented Sexual Preference Matrix," Collins boasts. "There are thirty-six different matching possibilities, cross-referencing heterosexual, homosexual, and bisexual callers, both male and female." If the caller is a heterosexual male, he can match with a female heterosexual and a female bisexual; everyone else is eliminated. Thus, his file is assigned a string variable of thirty-six zeros and ones; the ones indicate that that type of match works for him.

Including homosexual users presented somewhat of a dilemma for Collins. "My mother said, 'You're going to have trouble if users start complaining about gays being on the system.' All I could answer was that they exist. I could match them up to females and get them all upset, or I could match them up with each other and let them carry on their correspondence in private, and I chose the latter."

Collins openly admits that he started Dial-Your-Match as "just a fun thing." Despite that, many people really are dialing their matches.

"They don't tell me every step of the way how they're doing, but once in a while I'll get a message that says, 'Dear Matchmaker: Please delete me from this system. I have found my match, and we're both happy.'"

Reaping the Fruits of Franchise. To say that Dial-Your-Match has changed Collins's life would be an understatement. He met his current roommate, a former Dial-Your-Match system operator who moved to Burbank from New York City, through the system. He has been featured in newspapers across the country, *Mademoiselle*, *Money*, and will be in next March's *Glamour* magazine. He was interviewed on the air by a radio station in Orlando, Florida. His second disk drive and Epson MX-100 printer were both purchased with money he made selling the Dial-Your-Match software.

It was exactly a year ago that Collins sold his first program. At first, the thought didn't occur to him to sell the program. "I wanted mine to be the only one," he says. But people began telling him that if he didn't sell it they would write their own, and his would get lost in the crowd.



"So, I changed some of the code, making it more user-friendly so anyone could run it, and now they're up all over the country." And it doesn't stop there.

Collins sold his twenty-seventh copy last December to Michel Barthelemy, who has set up the first Dial-Your-Match outside the United States, in Marseille, France.

YOU'LL HAVE MORE FUN WHEN YOU PLAY BY THE BOOK

THE SURVIVAL KIT FOR APPLE COMPUTER GAMES is the **only** book that gives you the play-by-play on two dozen of the most exciting home computer games. Covering games in four categories—Adventure, Arcade, Fantasy, and Strategy—the book's not too sophisticated for beginners, yet packed with plenty of challenges for avowed computer game freaks. For each game you'll find detailed, fun-to-read descriptions, winning strategies, tips from experts, and a quality rating. All the games run on an Apple and hardware specs tell you at a glance what other machines can be used (many games run on the Atari 400 or 800, the TRS-80, and the IBM PC).

Registered trademarks: Apple—Apple Computer Inc. ■ Atari—Atari, Inc. ■ TRS-80—Tandy Corporation/Radio Shack ■ IBM—International Business Machines Inc.

WADSWORTH ELECTRONIC PUBLISHING COMPANY
Statter Office Building • 20 Park Plaza • Boston, Massachusetts 02116

TOLL FREE
1-800-322-2208

ALL ORDERS MUST BE PREPAID AND SHOULD BE SENT TO: WADSWORTH ELECTRONIC PUBLISHING CO., Statter Office Building, 20 Park Plaza, Boston, MA 02116. Postage and handling will be paid by the publisher.

☐ YES, I want to have more fun playing home computer games! Please send me:

— copies of THE SURVIVAL KIT FOR APPLE COMPUTER GAMES @ \$9.95

MA residents please add sales tax

ST

☐ Enclosed is my check.
☐ Please charge my ☐ VISA ☐ MasterCard

Card # _____ Exp Date _____

Name _____

Address _____

City _____ State _____ Zip _____

Signature for Credit Card _____

For credit card orders you can also call **TOLL FREE 1-800-322-2208**

THE SURVIVAL KIT FOR APPLE COMPUTER GAMES is also available at your local computer dealer. If not have them contact Wadsworth Electronic Publishing Company

TOTAL \$ _____

**Call us.
Our prices
for Apple
products
are so low,
Softalk
won't let
us print
them.**

In New York:

(212) 509-1923

In Los Angeles:

(213) 706-0333

In Dallas:

(214) 744-4251

By Modem:

(213) 883-8976

**CALL OUR MODEM LINE
FOR WEEKLY SPECIALS.**

**Alpha
Byte
COMPUTER
PRODUCTS**

31245 LA BAYA DRIVE
WESTLAKE VILLAGE, CA 91362

DISKETTES

ALPHA DISKS
Single-sided certified double density 40 Trks
w/ hub/rim Box of 10 Guaranteed one year
SCOTCH 3M
S.S. 0.0EN 40 TRK
VERBATIM DATALIFE
MD 525-01 10 16

DISKETTE STORAGE

5 1/4" PLASTIC LIBRARY CASE
PROTECTOR 5 1/4" 150 Disk Capacity
DISK BANK 5 1/4"

PRINTERS

C-110H PROWRITER PARALLEL
EPSON MX-80 W/GRAFRAX+
EPSON MX-80 F/T W/GRAFRAX+
EPSON MX-100 W/GRAFRAX+
EPSON GRAFRAX PLUS
COMREX CRT PARALLEL
NEC 8023A

MONITORS

AMBER 12"
NEC 12" GREEN MONITOR
BMC 12" GREEN
COMREX COLOR

MICRO PRO

APPLE CP/M®
WORDSTAR*†
SUPERSORT*†
MAILMERGE*†
DATASTAR*†
SPELLSTAR*†
CALCSTAR*†

MICROSOFT

APPLE
BASIC COMPILER*
Z-80 SOFTCARD
TASC APPLESOFT COMPILER
MULTIPLAN NATIVE OR CP/M

CP/M® SOFTWARE

THE WORD PLUS
d BASE II
SUPER CALC
We carry all CP/M® software in Apple format
Call for availability/prices

APPLE SOFTWARE

SCREENWRITER II
DICTIONARY
GRAPHICS MAGICIAN
MASTER TYPE
GENERAL MANAGER
DB MASTER
DB MASTER UTILITY PACK I OR II
PFS: GRAPH
PFS: (NEW) PERSONAL FILING SYSTEM
PFS: REPORT

CONTINENTAL SOFTWARE

THE HOME ACCOUNTANT
FIRST CLASS MAIL
G/L A/R A/P
VISICORP
VISIPILOT
VISITREND/VISIPILOT
VISIOEX
VISITERM
VISICALC

APPLE GAMES

SPACE VIKINGS
TUBESWAY
ULTIMA
RASTER BLASTER
FLIGHT SIMULATOR
SARGON II
SNACK ATTACK
WIZARDRY
BRODERBUND

APPLE PANIC
MIDNIGHT MAGIC
CHOPFLIFTER

ON-LINE SYSTEMS

WIZARD AND PRINCESS
SOFT PORN ADVENTURE
CROSSFIRE
ULYSSES & GOLDEN FLEECE
FROGGER
ULTIMA II
TIME ZONE

INFOCOM

ZORK I II III
STARCROSS
DEADLINE

SIRIUS SOFTWARE

SPACE EGGS
GORGON
BANDITS

MUSE SOFTWARE

ROBOT WARS
THREE MILE ISLAND
A B M

APPLE HARDWARE

SUPER CLOCK II
SOFTCARD PREMIUM SYSTEM
MICROSOFT RAMCARD
T/G TRACKBALL
T/G JOYSTICK
T/G PADDOLE
MICROBUFFER II: 16K W/GRAPHICS
MICROBUFFER II: 32K W/GRAPHICS
SUPERMAN II W/ZENER
RANA CONTROLLER
RANA DRIVE
SNAPSHOT
CPS MULTIFUNCTION BOARD
7710A ASYNCHRONOUS S-INTERFACE

"I saw the number for Dial-Your-Match on Bill Blue's Personal Message Service listing in San Diego," says Barthelemy from his photo studio in Marseille. "I met Gregg on the system and told him I would like to start one in the south of France."

Barthelemy has not only started a Dial-Your-Match, but he also plans to include American users on his system for the French to browse, contact, and exchange mail with. After a few program modifications on Collins's part, Barthelemy will call Collins's system every day or two, and both will exchange their respective users' mail by modem.

Please, Wait a Minute, Mr. Postman. One of the first Dial-Your-Matches to be sold went to a mail order dating service in Savannah, Georgia, called Viva la Difference! The Matchmaker there is Julie, who began Viva as a hobby three years ago. Already an Apple user, Julie spotted a magazine ad for Dial-Your-Match and knew an opportunity when she saw one.

"Both the number and quality of users have risen since I've added DYM to Viva," Julie proudly states. "I have about four hundred members in Viva and have just about doubled that with Dial-Your-Match."

For female users, whether they're from Dial-Your-Match or not, membership to Viva is free. Males must pay a fee.

Meanwhile, on the West Coast, Marc Schoenberg runs a similar DYM/Viva combination. His is Dial-Your-Match #19, located in Santa Monica, California. Schoenberg, with a little help from Julie, is able to offer local callers a longer list of potential dates.

From her Viva mail order list, Julie sends Schoenberg a list of people in his area who don't have access to terminals but can be reached through the mail. This gives Schoenberg's callers a greater number of people from which to choose. His callers can then get in touch with Viva directly if they wish to correspond with any of those who can be contacted only by mail.

But that's not where the features of his system end. He has also divided his public board into categories, so that those with special interests have their own areas to post messages. He's also adding a third disk drive that will hold a biographical disk. Now, in addition to the usual multiple-choice questionnaires, users will be able to fill in a few lines about themselves, in their own words, for others to read.

Finally, many of the callers of Dial-Your-Match #19 get together once a month to socialize and meet each other in person. At the first meeting, there were actually more females than males—a unique situation, since more than 80 percent of the date-a-base is male.

Only the Beginning, Only Just a Start. As the popularity of modems grows, so do their uses. Today, it's not unusual for people to be downloading stock market quotes, catalog shopping, switching on the lights at home from the office, or even playing *Dungeons and Dragons* games, all by modem. But finding a mate? It's unlikely that Dial-Your-Match will ever replace wining and dining. It is, however, a new way of finding someone to wine and dine.

In addition to those who are seriously looking for others to go dancing, spend a day at the beach, or visit rust museums with, there are those who would just like to make a few friends to correspond with through the system's electronic mail. These souls need never confront the other person, but have only to present an image that's intriguing enough to pique the curiosity of anyone who's casually browsing the questionnaires.

In this way, Dial-Your-Match is also a role-playing game. Just as *Wizardry* players become wizards, mages, samurais, and ninjas, introverts and extroverts can become the persons they dream of becoming—the Gables and Lombards of the CRT screen. Wallflowers can anonymously approach members of the opposite sex and say things they're too shy to say in person. The quiet, bashful homebody can log on and become a young, swinging single.

But, most of all, it's also a free service for people like Clark. Well, sort of.

To: Clark347

From: Linn842

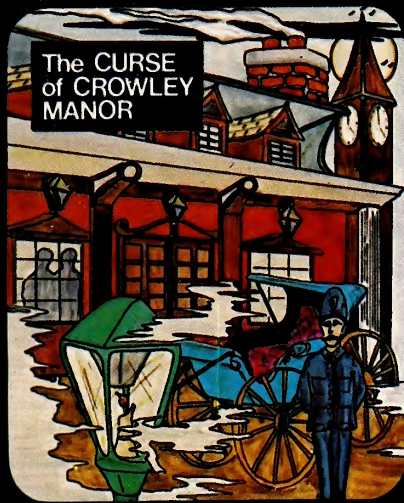
Subject: I'm washing my hair.

Instant iced tea, Toyotas, gas money, and rust museums? Sorry, I'm busy for the next few years. Take a hike, buddy!

OTHER WORLDS. OTHER REALITIES.

(FOR EXPERIENCED ADVENTURERS ONLY!)

other Venture by Jyym Pearson



Copyright 1981
Adventure
INTERNATIONAL
A DIVISION OF SCOTT ADAMS, INC.

THE CURSE OF CROWLEY MANOR

by Jyym Pearson

You've sensed it before: nameless, unreasoning fear. Fear of the unseen — of things that scurry and scabble through the shadows when the lights have been put out. How then will you fare when you face the Ultimate Evil, how will you possibly survive — **THE CURSE OF CROWLEY MANOR**?

Now, another giant leap forward for Adventure lovers everywhere — full color, hi-res graphics! That's right, author Jyym Pearson's masterpiece of the macabre explores a new dimension in fright with the incredible wallop of quality graphics — the kind you bought your APPLE for. **THE CURSE OF CROWLEY MANOR** is an excursion into mind-wrenching terror as you enter the dreaded Crowley Estate in search of answers to some pretty grisly questions. Fear fans take note. This is the stuff that nightmares are made of, so think twice before you approach.

THE CURSE OF CROWLEY MANOR features Adventuring the way YOU like it, with plenty of vibrant graphics, clever plot twists, and a scenario that'll roll your socks up and down your legs! If Adventuring has become a bit tame for you lately, this is one sure-fire cure! **THE CURSE OF CROWLEY MANOR** will run on any APPLE 2 with 48K of memory, Applesoft in ROM and a disk drive. We supply the software, you supply the atmosphere. (A well-lit room is optional, but recommended!)

APPLE 2 48K DISK
Applesoft ROM and DOS 3.3 required
042-0108 \$29.95

PRICES SUBJECT TO CHANGE

THE LABYRINTH OF CRETE



LABYRINTH OF CRETE

by Cliff Johnson and Allen Pinero

An Adventure of truly epic proportions, **LABYRINTH OF CRETE** paves the way for an entirely new form of Adventuring — you control the actions of TWO separate characters! That's right, the player is in complete control of two powerful warriors, the stalwart Jason, and the might-thewed Hercules. Straight from the mythology of ancient Greece they come, and their quest is a most dangerous one, indeed — the recovery of the mythical Golden Fleece from the heart of the horrific Labyrinth! But have a care, O rash one, the designer of the maze, Minos of Daedalus, crafted well the nefarious network. Evil most foul abounds within its walls, including all manner of traps, tricks and a gruesome parade of maze inhabitants. Many have tried, and many have failed to penetrate and exit the Labyrinth — will you be able to direct Jason and Hercules to success?

If you're ready for a new era in Adventuring, **LABYRINTH OF CRETE** is just what the leech ordered! Featuring full color, hi-res graphics that depict your trek into terror, you'll be amazed at the authors' slavish devotion to the spirit of the timeless Greek characters and situations.

LABYRINTH OF CRETE comes with a detailed instruction manual that will add to your enjoyment of this unique form of Adventuring entertainment, and will operate on any APPLE 2 computer with one disk drive and 48K of memory.

APPLE 2 48K DISK
Applesoft ROM and DOS 3.3 required
042-0162 \$29.95

other Venture by Jyym Pearson



Copyright 1981
Adventure
INTERNATIONAL
A DIVISION OF SCOTT ADAMS, INC.

ESCAPE FROM TRAAM

by Jyym Pearson

You've managed to survive the Curse of Crowley Manor and negotiate the awesome Labyrinth of Crete — but will even your finely tuned Adventuring skills give you the necessary edge to **ESCAPE FROM TRAAM**?

As soon as your small space cruiser began losing altitude, you knew you were in for serious trouble. You somehow walked away from a fiery landing that would've spelled certain death for a less fortunate man, but as you are about to learn, there are fates worse than a quick death.

ESCAPE FROM TRAAM is a detailed, hi-res Adventure for the APPLE computer that defies the player to successfully search a bizarre alien world for a means of escape. The perils are many and the opportunities for survival are few. But for the clever Adventurer, a single opportunity is all that might be needed for a speedy exit from this hellish world. Are you up to the challenge?

All of the traditional Adventure elements are in **ESCAPE FROM TRAAM**, including two-world command input, game save feature, and an extensive vocabulary. Add to this the impact of colorful hi-res graphics that will allow the story to spring to vibrant, scintillating life, and you'll know that **ESCAPE FROM TRAAM** will be a fine addition to any graphic Adventure collection.

APPLE 2 48K DISK
Applesoft ROM and DOS 3.3 required
042-0109 \$29.95

To order, see your local dealer. If he does not have the program, then call
1-800-327-7172 (orders only please) or write for our free catalog.

Published by **ADVENTURE INTERNATIONAL**
a subsidiary of Scott Adams, Inc.

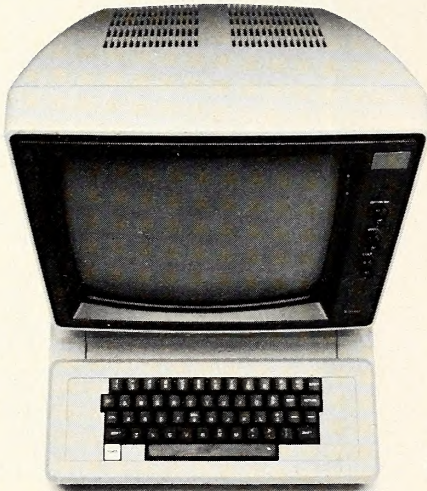
BOX 3435 • LONGWOOD, FL 32750 • (305) 830-8194

Adventure
INTERNATIONAL
A DIVISION OF SCOTT ADAMS, INC.

IF YOU'RE CONFUSED PERSONAL COMPUTER,

At this moment, there are no less than 50 personal computers on the market. And more are being introduced every day.

On one hand, having all those options is a good thing. On the other, it can make picking the right one pretty difficult.



*Computers come in two parts.
You have to buy both.*

We'd like to help. So here are a few suggestions about how to buy the computer that's right for you.

Computers come in two parts.

One part is the "hardware," which is the machinery itself. The other is the "software," or a program, as it's sometimes called.

Software is the part that tells the computer what to do, the way a driver tells a car what to do.

Without software, a computer can't do anything.

And vice versa.

You have to buy both.

Buy the software first.

Since the reason you're buying a computer is to get the capability the software gives you (remember, it's the software that knows how to get things done), it makes good sense to pick the software first.

Start by making a list of the things you want to use the computer for. It can include almost anything—any kind of inventory, filing, accounting, graphics, reporting, record-keeping, analysis—you name it and there's probably a software program that does it.

Next, take the list into a computer store and ask the salesperson to give you a demonstration of the program, or programs, that will do the things you want.

Even though you'll need a computer for the software demonstra-

tion, keep in mind the computer is just a vehicle. The software is the driver. And once you've decided on the software, picking out the rest of the computer system will be much easier.

The simpler the better.

Look for software that's easy to learn, easy to use, and that does the job in the simplest way possible.

Good personal software should be, as the computer people say, "friendly." Meaning that it helps you do what you have to do without getting in the way.



Meaning there are no complicated routines to follow to perform a simple task. And no programming language to learn.

Some people, however, will tell you that software has to be complicated to be powerful.

Nothing could be farther from the truth.

Because in order for a program to appear simple to you on the outside, it has to be extremely complex on the inside.

ABOUT BUYING A HERE'S SOME HELP

Good software keeps the complications in the computer, where they belong. And keeps the capability at your fingertips. It's that simple.

You simply have to see for yourself.

You can read any number of interesting books and magazines about personal computers. You can ask friends who have them. You can look at all the sales literature you can get your hands on. And you should do all those things before you decide to buy.

But as helpful as all that can be, there really is no substitute for a real, live demonstration.

When you do go out shopping, we recommend you take a look at the PFS® Family of Software.

The PFS family is designed the way we think all software should be: simple, straightforward and powerful.

Currently, three products make up the family. PFS:FILE, PFS:REPORT and PFS:GRAPH, with more programs on the way. Here's a little more about each of them.

PFS:FILE. The simplest way to get organized.

Basically, FILE works like a paper filing system, without the paper. So you can record, file, retrieve and review information in a fraction of the time it takes with a conventional filing system.

FILE lets you arrange your information in "forms" you design yourself. So you can get at and really use your information in ways never before possible.

What's more, FILE lets you change the original form without having to redo the information on it.

PFS:REPORT. Making the most of your information.

REPORT summarizes the information on your forms so you can use it to analyze, plan and make better-informed decisions.

With REPORT, you get presentation-quality reports—sorted, calculated, formatted and printed—automatically, in seconds.

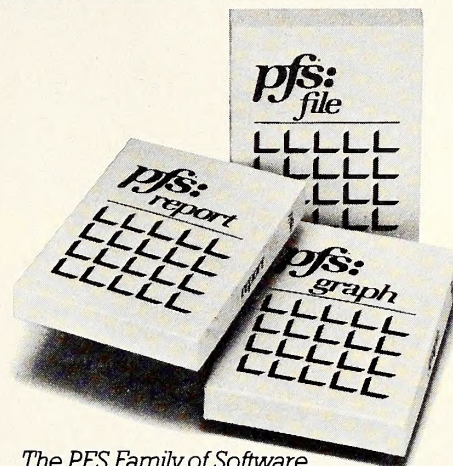
PFS:GRAPH. Instant pictures.

GRAPH gives you presentation quality bar charts, line graphs, and pie charts, in black and white or color, on paper or the computer screen. To get a clearer picture of things and spot trends instantly, you simply enter your information and specify the kind of graph or chart you want. GRAPH does the rest.

You can also mix and match line and bar graphs, or even stack or compare up to four bar graphs simultaneously.

And GRAPH will work with PFS:FILE, VisiCalc® files, or data entered directly into the computer.

Best of all, compared to the cost of hand-drawn graphics, GRAPH can save you enough money over the course of a few months to pay for the computer it runs on.



*The PFS Family of Software.
Simple and powerful.*

Send for our Free PFS SOFTWARE CATALOG.

It'll tell you more about the PFS Family of Software and how to use it.

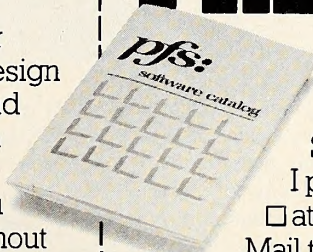
It's free. And all you have to do to get one is return the coupon below, or see your participating PFS dealer.

The PFS Family of Software. We've already made computers simpler to use.

Now we're making them simpler to buy.

pfs:

FREE PFS SOFTWARE CATALOG



Name _____

Address _____

City _____

State _____ Zip _____

I plan to use a personal computer:

☐ at home ☐ at work ☐ both.

Mail to: PFS, 422 Aldo, Santa Clara, CA 95050

ST 2/83

**Word Processing:
New
Format
For News**



BY JONATHAN MILLER

The California desert hasn't always been hospitable to pioneers, but on April 14, 1981, it proved a welcome sight to the pilots of America's first space shuttle, *Columbia*.

Thousands of spectators were gathered at Edwards Air Force Base northwest of Los Angeles to witness the historic occasion. A smooth touchdown was anticipated, but this launching had already had its problems. Two technicians had died in an accident at the launch site the previous month, and seventeen heat-shielding tiles had parted company with the spacecraft's outer skin sometime during liftoff. The missing tiles were said to be in noncritical areas, but seeing would be believing for the keen eyes now scanning the cloudless desert skies.

Here was a genuine media event, and the fourth estate was out in force—radio, local television, the networks, and the new kid on the block, upstart cable. Rolling in with their big guns and minicams and two-ways, they'd turned this desolate corner of the Mojave Desert into a gigantic broadcasting booth. The electronic media had come to report the news, but at least one piece of their equipment came close to making some: It threatened, if only briefly, to interfere with the landing.

Interference on a Touchdown Pass. "People in the audience shouldn't be conscious of what's going on backstage," says Richard Rudman, a radio engineer who worked with federal trouble-shooters to locate a "spurious" transmitter emission that was interfering with the *Columbia*'s touchdown guidance system. "It should just happen. The trouble is, we're in a period when we've got to make people in broadcasting and government more aware of what's happening backstage or the show won't go on."

Rudman, the engineering manager for all-news KFWB radio in Los Angeles, is a prime mover in the backstage education movement. He is a founding member of the Southern California Frequency Coordinating Committee, a pioneering ad hoc group established in 1976 to keep some two hundred broadcasters from Fresno to the Mexican border literally "on the beam."

The problem with doing that, according to Rudman, stems from the fact that the airwaves are getting crowded. The information explosion has put additional demands on the limited resource of radio frequencies, as broadcasters, dispatchers, and paging services rub elbows in the electromagnetic nether world.

"Future shock has entered the media," Rudman says. "We feel compelled to bring things to people almost before they happen." For news organizations, that means expanded coverage. More remotes. More two-way channels for reporters in the field. More minicams on microwaves bringing pictures at the scene live at eleven. More potential, in short, for conflict.

"I've seen situations where people have almost come to blows over this," confides Rudman, tactfully declining to name names. "It's a classic traffic situation, with no traffic lights and two people on the same street, on the same lane, coming at each other. We're living on the cutting edge of grief and technology."

Southern California, the trendy megalopolis with the quaking edge running down its ocean side, simply became the first to do something about the problem, says Rudman. With a rapidly growing broadcast market and peculiar terrain features that play havoc with signals, it became obvious that the better part of self-interest was talk, not fight. If people were talking and knew what was out there, there'd be less cause for conflict.

Which is why the committee was up at Edwards prior to touchdown, working with representatives from the National Aeronautics and Space Administration, the Federal Communications Commission, and the Air Force. NASA had detected the spurious emission, the spooky signal that was spurting from a transmitter like a leak from a punctured hose. It was a matter that required swift locating and diplomatic handling. NASA's first mission was to get the astronauts home safely; its second was to sell its space program via the media.

Rounding Third and Heading for Home. "You're faced with a situation of walking up to somebody and saying, 'Hey, this thing you're using to fulfill your station's needs is causing interference and you have to shut it off,'" Rudman explains. At Edwards, such a confrontation was

avoided because the offending party wasn't a person but a piece of faulty equipment.

The solution was simple: replace the equipment. But the potential for hard feelings is always there, stresses Rudman, particularly in the immediate Los Angeles area where there are 80 available channels and 120 users. The trick when any two are on a collision course is to get them talking, but that's a skill that calls for some reeducation. "People today almost have to be shown how to communicate," says Rudman.

Facilitating communication has, in fact, become an increasing part of Dick Rudman's job, or rather, jobs. First of all, there's the station, whose slogan is "All news, all the time." He's got to make sure the station's on the air all the time to deliver the news to its million weekly listeners. That means maintaining the studio, the transmitter, the two-way radio units in the reporter vehicle fleet, and just being an all-around Mr. Fix-It for the sprawling building, a one-story former supermarket squatting a stone's throw from the world's most overrated intersection, Hollywood and Vine.

Fact is, Dick Rudman has his share of responsibilities, both inside and outside. There's the management of a half-million dollars in budget lines, overseeing a staff of eleven, consulting for the Satellite News Channels launched by parent company Westinghouse, plus all this committee work. Rudman did such a good job promoting the pioneering efforts of the California Committee, guess who the Society of Broadcast Engineers turned to last year to chair a national committee promoting same?

Who Will Manage My Wonderful Morass? The reward for good work was more work, and Dick Rudman began to see himself sinking ever deeper into a morass of correspondence. Technical reports, camera-ready articles for trade magazines, letters to the National Association of Broadcasters, the FCC, equipment manufacturers—just the kind of gritty work he didn't need with a secretary out on disability.

What he did need, he finally concluded, was his own personal management system—an Apple, spreadsheet, filing system, and word processor.

So in September of 1982, he went for it—an Apple, *VisiCalc*, *PFS*, and *Format II*. He was buying into the standard package, but he shied away from CP/M-based *WordStar* after trying it. He felt that what it promised in power it sacrificed in an elaborate command structure. What he was looking for was something that was reliable and friendly, that would welcome him back after a business trip.

"I may be away from the office and my Apple for two weeks at a time," Rudman explains. "I don't want to have to take a refresher course on my word processor because I forgot a lot of prompts for a whole bunch of control characters." Software should be written to protect him from himself, from his own bad habits as a typist and writer, he reasoned. "It's an imposition if I have to learn another language to do my job."

What he finally decided on was *Format II*, a menu-driven word processor distributed by Kensington Microware of New York. The program lists for \$250 and requires an eighty-column card. Rudman had been favorably impressed by a demonstration he'd seen of it, so now that he needed an electronic amanuensis he took the proverbial plunge. For a while, though, it seemed as if he'd dived into the shallow end of the pool.

Rudman discovered that he had two printer problems, both of which were related to running the program off a serial printer. To begin with, he was unable to get his Apple and Comrex printer to interface with the *Format II*'s 2K buffer. It seems that the printer couldn't tell the Apple, through the serial card, when it was full. In addition, Rudman didn't seem to be able to use *Format II*'s underlining routine.

The solutions were amicable, if involved. Rudman swapped serial card and printer for parallel card and printer with the computer store that sold him the package. He then reconfigured his system. Now the program overcame the shortcomings of the printer underline routine by telling it to reverse line feed and then underline as a separate line.

Flexing Format II. Rudman regards his printer misadventures as inevitable in the Model T age of computerdom, particularly with relatively new products such as *Format II* and his Comrex printer. The best one can hope for are supportive dealers and flexible programs that

circumvent incompatibilities in hardware and software. "I was really amazed with this piece of software, that it had the versatility, the power to write an underlining routine that would work with the Comrex."

Rudman also discovered a glitch in *Format II*. Having dutifully saved his first batch of letters, he asked to see a listing, only to be rudely informed that his floppy wasn't a text disk. "I was on the verge of throwing up my hands in disgust," he recalls. He chose instead to call the vendor, and Kensington promptly sent him two new disks to replace the master and backup that came standard with the package, explaining by the by that they'd had a bad run of duplicating.

Since then, Rudman has had no problems with *Format II*. "I haven't been able to stump this on anything yet," he reports. "It's done everything a nontypist could ask for." In short, the program is living up to advertised claims of being easy to use and format flexible in the what-you-see-is-what-you-get mode, but Rudman insists that his satisfaction should not be taken as a blanket endorsement. "I'm not selling this software. It has its beauty. It has its elegance and uses, but it is not the ultimate word processor."

On the plus side of ultimate, there is an impressive array of single-stroke formatting commands. The majority are logically mnemonic, like C for center and D for delete, but others take some remembering. These latter worthies include such useful if less self-evident commands as T for removing right justification and G for transferring text to an eighty-line buffer—for placement elsewhere in a document or within another document.

Other features that endear the program to Rudman include a built-in mailing list that can be used for database management, proportional spacing and microspace justification that enable him to produce camera-ready magazine copy, and some thirty text editing commands that make it easy for him to customize correspondence.

Scream of the Typo. *Format II*'s principal virtue is as generic to the process as it is to the program. Word processing and *Format II* have improved Rudman's writing both in thought and deed. Typos he doesn't catch on the screen shout out at him when he proofs a rough printout.

Rudman is not oblivious to *Format II*'s flaws. Its principal shortcoming, in his view, is that you can store only seventeen legal-size pages on a disk (or thirty-four if you have two drives, as he does). That hasn't posed a problem for him as yet, but that's only because he tries to keep his business correspondence short and sweet.

"If you can't say it in a page, it probably isn't worth saying," he offers, quoting some journalistic maxim he picked up at Penn State. "On the other hand, if I were writing a book on, say, *The Decline and Fall of Broadcasting* that went on for nine hundred pages, that's a lot of disks."

If he had his druthers, Rudman would prefer a *Format II* that enabled him to create word glossaries that give page references. "*Format II* allows me to do forms printing easily," he notes, "but I can't take a total off that form, except by writing it down on a piece of paper and saving it." The package does allow users to swap files with other programs, he allows, but it takes some finagling with a utility disk.

Rudman offers these last remarks in the spirit of friendly advice to the software industry. What's needed are easier to use, more compatible pieces of software.

"If the people at *Format II* don't come up with something that lets the program talk easily to a spreadsheet or become a spreadsheet and do filing, then I'll go to another piece of software. All this investment in *Format II*, *VisiCalc*, and *PFS* means nothing if you can't grow with it and it can't grow with you."

What Not To Do with Your Finger. Career turning points are usually hard to fix, but Richard Rudman remembers his with the shock of recognition. He and his brother were crawling around on a rug in the family's Boston home when young Richard got a bright idea. "I stuck a finger in an electrical socket," he jokes, "and I've been fascinated with the stuff ever since."

As a teenager that romance took wavelike form on both sea and air, with Hardy boy Richard earning certification as both an outboard motor mechanic and a ham radio operator (and later, as an adult, as a pilot). In 1961, Rudman entered a cooperative work study program at North Eastern University in Boston with vague notions of becoming a technical writer, but he quickly gravitated toward broadcasting. A very logical

progression: a work study job in the electrical engineering department, a stint as the chief engineer for the school radio station, a summer job with Westinghouse station WBZ in Boston, and a teaching assistant position in the Penn State television department while working on the master's degree in journalism. Very logical indeed, only Rudman didn't get the thesis.

Love and fate intervened. Rudman met a lady and got married. He also lost his thesis when burglars made off with his notes on the political, economic, and social aspects of radio frequency allocation.

So what if he didn't have a journalism degree, he concluded; maybe his technical experience could get him into the production end of broadcasting. "I always felt I could become a radio engineer without the degree," Rudman recalls. "Radio is still an industry where it's possible to get a job with what you know and what you've done. I can sit down with a book on a new discipline and teach myself. If it's explained clearly, I can figure it out, and, if it's not, I can usually still figure it out."

So, figuring it out, Rudman put in his apprenticeships at WBZ in Boston, Massachusetts; KAYN in Tucson, Arizona; and KGB in San Diego, California; before moving on up to KFWB in 1975. The unpredictability of news suddenly added an exciting new dimension to a career dominated by automated and semiautomated music formats. Dick Rudman now found himself planning for the L.A. Unthinkable—the great quake everyone knows is coming but hardly anybody worries about, except possibly engineering managers for all-news radio stations who want their call letters to shine in the darkest of hours.

"This is a behind-the-scenes story that is of vital importance to Los Angeles and the station," says Rudman, who likens KFWB to a kind of public utility or resource. "The first thing that's going to go in an earthquake are the telephone lines, so for KFWB one of my goals has been to set up a two-way radio system that bypasses Pacific Telephone. We feel that the station has to be able to serve the listeners and do everything possible to survive a quake."

This means maintaining emergency generators for the studio and 5,000-watt transmitter, constantly improving two-way radio communication between field reporters and news directors, and covering the station's exposed frequency flank by being active in regional coordinating activities. It makes stellar sense by Rudman's lights. If broadcasters know you're out there, they're not as likely to encroach on your turf.

Beat the Apple. Rudman surveys KFWB turf from an office that looks out on a colorful and spacious newsroom, one Rudman takes pride in having helped design. What's most striking about this engineer's window on the world is the lighting: there hardly is any. When forty-year-old Richard Rudman walks in every morning, he doesn't hit the light switch, he hits his Apple. The principal sources of illumination are a sliding glass door leading to the newsroom and the cool, efficient glow of his Apple, its *Format II* booted up, its cursor dutifully pulsing.

Rudman takes a lot of good-natured ribbing about living in a glass cave, but he rather likes the detached feel. He can lean back in his managerial chair, sip steaming coffee, and get focused on the big picture. Framed by his wall-length glass door is the incandescent image of the newsroom, rimmed by state-of-the-art studios and patterned on those vast newspaper city rooms. Two images dominate—a news director who makes his rapid-fire decisions standing in the center of a large semicircle otherwise known as a slot, and a rumpled, harried newswriter off in a corner doing a John Garfield imitation, cigarette dangling and fingers pecking away on a old manual typewriter.

Time marches on. Like every other industry, broadcasting is playing catch-up. Dedicated word processors have been in the works for some time at KFWB, says Rudman, but were sidetracked two years ago when parent company Westinghouse absorbed Teleprompter to become the third largest cable company in the country. "It was like a gnat swallowing an elephant," says Rudman, an audio specialist who spent the better part of last spring helping Westinghouse launch Satellite News Channels.

All this consulting, not to mention coordinating, has increased Rudman's workload, but he couldn't be happier with the variety. "It seems every time I might go stale, they throw a new challenge at me."

Which is pretty much how it is with the broadcast business in general, where technology keeps the pot of innovation boiling. Advances in



Can You Survive THE SNAPPER?

As the clock ticks down the game begins, and danger closes in . . .

To survive you must leave base in search of the blots.
The more blots you eat the more points you make.
But time is against you! You must return to a base
before time runs out.

Can you get back?

The grid is filled with danger—get caught in a Gamma-
Field and you are annihilated.

Roaming whirlers will blast you off the grid.

The grid will disintegrate before your eyes—but find the
magic ring before it disappears and the grid will be
restored.

What next?!

The longer you survive the more treacherous and
slippery the paths become.

Beware . . . You are about to enter the **SNAPPER** zone.
For **The Snapper** see your Apple® dealer.

Simply the best . . .

Silicon Valley Systems

Silicon Valley Systems Inc. 1625 El Camino Real #4 Belmont, CA 94002 415-593-4344

Apple is a registered trademark
of APPLE COMPUTER, INC.

design are enabling engineers to split channels and to meet ever-increasing demand, while frequency-coordinating committees like Rudman's are finding better ways to manage a limited resource through the far more complicated business of human communication.

"You have to look into the semantic content of everything you say and do," says Rudman, a devotee of S. I. Hayakawa's *Language in Thought and Action*. "Whatever your perceptions are, they only approach reality as a limit. The thought is not the action, the map not the territory. You have to keep that in mind, and word processing helps me do that."

Fascinating Fun. What all this comes down to, of course, is that Rudman finds fascination in his job. He's doing what he wants and he's having fun in the process.

"Radio is my life," Rudman says. "Broadcasting, like computing, started out as a hobby and now it's a business; but the people I respect most are the ones who would work in it even if they weren't paid as much just because it's in their blood."

"The master's degree wasn't important to me. It was more important to accumulate experience and do things to get where I could make a difference. I like to think it's coming true to an extent now." ■

Olivieri's Outline of Word Processors by Peter Olivieri

Continuing our quest to examine the major word processing programs that are currently available for the Apple, we'll look this month at *Format II* from Kensington Microware.

Format II. Kensington Microware, 300 East 54th Street, Suite 3L, New York, NY 10022; (212) 486-2802. \$250.

Equipment required: 48K, one or two disk drives, a monitor (a television set is not an acceptable alternative), a printer, and an eighty-

column card. Compatible cards include Computer Stop Omnivision, M&R Sup'R'Term, A.L.S. Smarterm, Vista Vision 80, or Videx Videoterm (after installation of the chip provided in the *Format II* package). A keyboard modification for lower case is also required; the necessary materials and instructions are provided as part of the package. Optional: a 16K RAM card. Some, though not many, of the advanced text movement functions require this extra capacity. The program is also compatible with the Enhancer II from Videx.

Today's Format. This is a very powerful word processor. One of its major strengths lies in the fact that you can see what the pages of a document will look like before you print it. Even such things as underlining, right justification, and page breaks are shown.

Most of *Format II*'s commands are easy to use and easy to remember. The delete command typifies this arrangement. To delete something, you just press control-D and the program asks you what you want to delete.

The program is menu-driven. It opens by presenting you with a wide variety of menu choices. To select an option, you simply type its first letter.

For several months before its release, *Format II* was tested in actual settings. It's readily apparent that the resulting product profited from this; it's not only thorough, but quite user-friendly.

One of the striking differences between *Format II* and other word processing programs is the way it handles the creation of a document. Instead of saving a "document," it saves "pages." Each page is given a name—often, it's a good idea to give each page the same family name, followed by a number to distinguish it from other pages in the same document. This arrangement may sound cumbersome, but, as it turns out, it presents no problems in the printing of a lengthy document and is, in fact, rather flexible.

Up to seventeen pages of text can be stored on a single floppy disk. It's important to realize that the number of "pages" you store may not correspond exactly to the number of printed pages you have in your final document. When you're ready to print out your entire document, you specify what the characteristics of a page will be. This means that you may end up with more or fewer pages than you have "in storage."

During the page correction process, you're asked to specify how many lines there will be on a given page. This number can be different for each page and can even be changed as you're in the process of creating a document. If there's not enough room on your newly created page to fit all the material you want to include, you can either redefine the length of that page or allow the extra material to go into an "overflow" area for later retrieval.

When you're entering information onto a page, the top left-hand corner of the screen displays a line counter and a position counter. The line counter tells you what line of the page you're currently printing on and how many lines remain on that page. The position counter tells you what column you're currently typing in as you move across the page. You're also shown (by means of short vertical lines) where the right margin is currently located. Of course, this margin can be altered to suit your needs.

As you'd expect, the word wrap feature is a standard part of this package. There is, however, another useful feature you might not expect to see—hyphenation. Since word wrap can't cope sensibly with certain situations, you sometimes get a line in text that has big gaps or holes in it. This will happen, for example, if the last word on a line is a very long one that had to be placed entirely on the line that follows. In cases like this,



Pot 'O Gold Plus is a medley of 46 games that were assembled for your amusement. Where else can one get 46 programs for less than \$1.00 a shot?

Can be used with the ECHO II for voice output.

\$39.95

System Requirements:
Apple II 48K with Applesoft ROM, disk drive, paddles or joystick.

FREE comprehensive Catalog and Newsletter with any purchase. Otherwise send \$2.00.
U.S. /\$5.50 Foreign for Catalog and \$1.00
U.S. /\$2.00 Foreign for Newsletter.

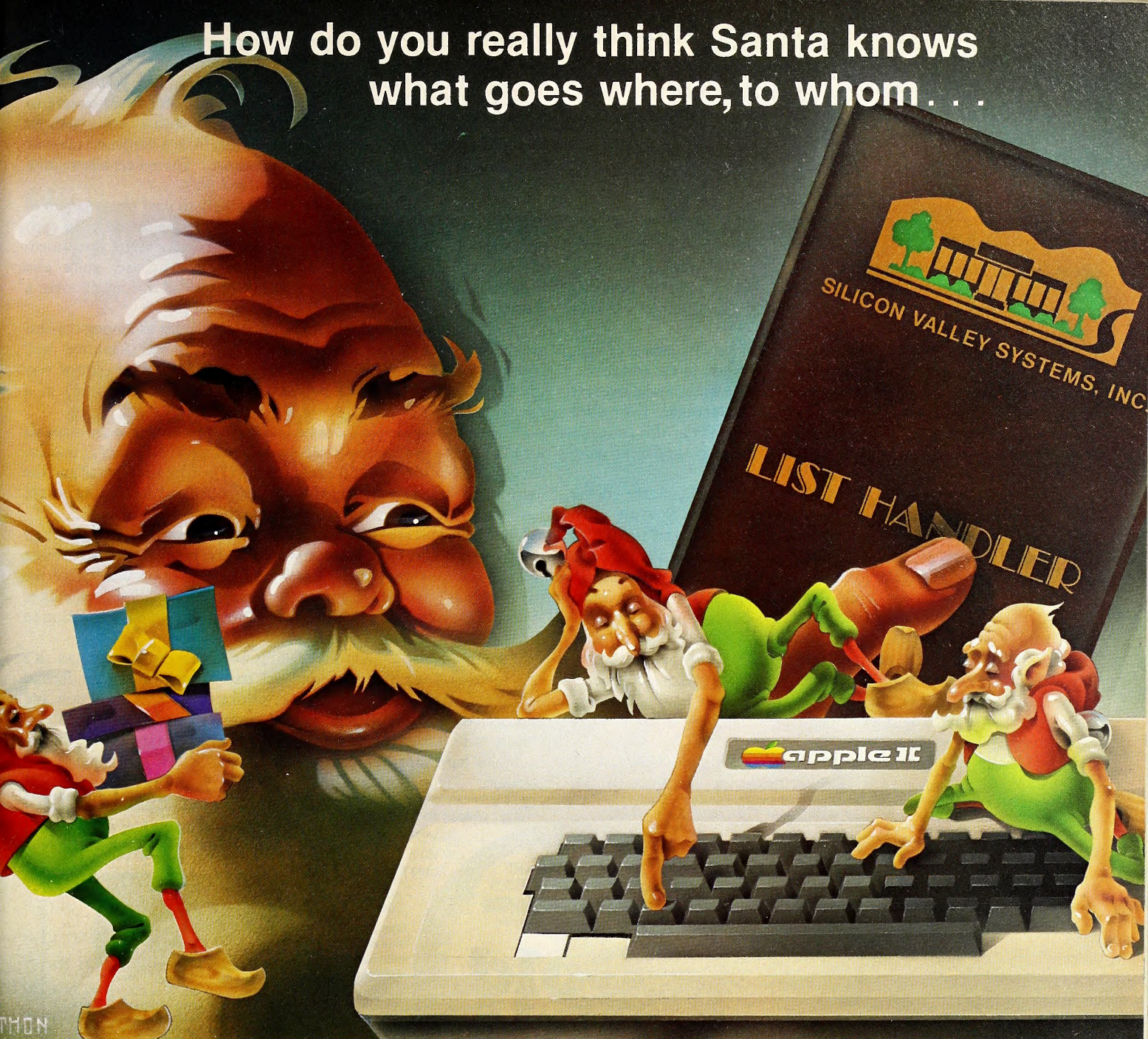
Phone orders (Need Mastercard or Visa)
U.S.A. (except Calif.) (800) 423-5441
Calif. and Foreign (213) 349-0300
For information or technical questions
(213) 349-5560.

Add \$2.50 U.S. /\$10.00 Foreign shipping.
Calif. residents add appropriate sales tax.

**19517 Business Center Drive
Northridge, California 91324**

*Apple is the registered trademark of Apple Computer Inc.

How do you really think Santa knows
what goes where, to whom...



LIST HANDLER

The List Handler is, **without doubt**, much more than a mailmerge program.

Presto! List Handler turns your Apple® into a quick response file cabinet with room to grow storage space. **With List Handler you can hold up to 3000 records per drive so that 24000 can be kept on-line at the same time with multiple disk drives.**

These records can be addresses if you choose, but here's where the versatility and flexibility come in.

Put what you like on those records!

- inventory
- product lists
- form letters
- short newsletters
- mailing lists
- personnel directories
- invoices
- labels

The list is endless.

The List Handler will run on one or more drives, read and write DIF format and has unlimited sort fields.

List Handler can stand alone or as an interface with your Word Handler (or most other word processors) for the

most efficient word processing duo around.

The List Handler will surprise you, but the first surprise will be the price! **At \$89.95** the List Handler is the best and the only buy of its type around.

The enormity of Santa's job may have you skeptical of Santa's existence—but when you see the List Handler you might just believe in Santa again! See your Apple dealer for the List Handler.

Apple is a registered trademark of APPLE COMPUTER, INC.

**Simply the best...
Silicon Valley Systems**

Silicon Valley Systems Inc. 1625 El Camino Real #4 Belmont, CA 94002 415-593-4344

D	Delete line paragraph text all
I	Insert line
E	Search for certain strings of text and replace them with others
A	Align numbers (in a variety of ways)
C	Center text
F	Find text
J	Justify text
U	Underline text

Table 1.

Format II automatically hyphenates the word for you as best it can. You can also, of course, insert the hyphen yourself. Hyphenation can be a very important consideration in many word processing applications; it should not be overlooked.

Format II allows you to edit your text extensively by means of logical, easy to use commands. Pressing escape puts you in the edit mode. From there, you can correct mistakes, add and delete text, and move text around on a single page or from one page to another. Few word processing packages offer as many editing commands as this program does. Table 1 contains examples of a few of the single-keystroke commands that are available.

The large character buffer that's provided also facilitates the editing process. If there's a certain phrase or paragraph that you use often throughout a document, you can place it in the buffer and recall it as needed with a single keystroke. In addition, you can use the buffer to move text around on a page or from one page to another in a document.

At print time, you can print the page that's currently in main memory, and/or you can print any of the pages you've stored on additional disks. *Format II* will ask you how you wish to set up your document (how many lines per page, and so on) and how many copies of it you'd like to have. You can print various combinations of stored pages in whatever sequence you choose. This is particularly handy in professional situations that require some pages of a document to be the same while others must be customized.

Format II also has a mailing list feature as a standard part of the package. You can print mailing labels or merge lists of names and ad-

resses with a letter or document you've created. In fact, you can make selections from your list prior to printing. Thus, you could choose to merge only the names on a list that fit particular criteria. You could, for example, include only those people who come from a particular town or only those whose job category is "programmer." The system allows for a variety of logical tests (such as *and*, *or*, and *not*).

Incidentally, the program also has the ability to send printer codes to your particular printer. Headers and footers can be included on each page, and superscripts and subscripts can be included in your documents. Proportional spacing is also available. The user guide also includes a discussion of how to transmit *Format II* documents over a modem.

And, speaking of the user guide, it certainly rates as among the best around in terms of the clarity of the writing. It's well organized, well indexed, and thorough. In addition to an introductory level (but very helpful) tutorial, the manual provides more definitive information in a reference guide format.

The only drawback is the same one that seems to plague the manuals for most of the programs we've been examining. The *Format II* manual could be more attractive and easier to read. The type size is small and the illustrations are crowded together. Better paper and formatting would have improved the manual's appearance.

Make no mistake—the content here is excellent. But the quality of the product could have been improved if the manual had been more professional looking. Indeed, this would have affected the cost of the package, but it would also have made the reading much more palatable. With complex and thorough products of this type, such a concession to the reader is almost a requirement.

Format II rates among the leading word processing packages. It's easy to learn to use, thorough, and well tested. The menu-driven format is extremely convenient, the single-keystroke commands are simple and appropriate, and the manual is well organized and well written. It's important to remember, of course, that you must be sure to have the appropriate hardware installed in your Apple before you can use this package. □

RanaSystems

Your Apple computer can grow from ordinary to awesome in a matter of minutes.

The Elite disk drive Series by Rana Systems gives you that kind of magic. Quickly, easily and cost-effectively.

This superb family of sophisticated floppy drives was designed and perfected by a team of industry-respected engineers expressly for Apple® computer owners who have long been demanding more disk drive for their money.

Now they have a drive that makes an Apple perform the way it should. For example:

Elite One, the most economical Rana drive, delivers 15% more storage capacity than Apple's drive. The top-of-the-line Elite Three will provide an astonishing *four-times* more storage, approaching hard disk performance. It's done through exclusive high-density single and double-sided disks and heads.

Smartmodem



- Auto-Answer • Auto-Dial • Repeat
- Programmable • Use Any Language
- Touch-Tone and Pulse Dialing
- Audio Monitor • Listen to Connection
- FCC-Approved Direct-Connect
- Full or Half Duplex, 0-300 Baud
- RS-232C Interface • 7 Status LED's
- Two Year Limited Warranty

The PKASO Interface
Gray scale printing
Snapshot screen dump
support for the Apple Z-80 CP/M
Apple III compatibility

The master PKASO
printer interface
at a very low cost

APPLEWRITER® EXTENDED
additional capabilities

80 COLUMN
VIDEO CARDS
LOWER CASE
ADAPTERS

CP/M
Fortran
Pascal

Voice Entry
Free catalog

Microsoft 2.80 Software
Microsoft 16K Ramcard
Vides Videoterm

The MICROMODEM II is a complete communication system for the Apple II. It can transmit over the telephone lines data between your Apple and other computers anywhere in North America. In addition the Apple can be used as a remote terminal to another computer. The possibilities are endless.

HAYES MODEMS



CORVUS
SOFTWARE



Type and Talk
Video Digitizers

Bar Code Readers
Card Readers
Game Controls
Graphics Tablet
Music System
Numeric Keypads
Programming Aids

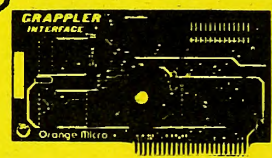
Attach SYSTEM
SAVER
to your
Apple II



FREE DATA
DISK WITH
EVERY \$49
WORTH
OF
PURCHASE!

INTERFACE CARDS

The Grappler Apple Graphics Interface



The most intelligent Apple Interface available. EPROM chip makes high-resolution graphics easy. Versions to accommodate the Anadex, Epson Series®, IDS Paper Tigers, Centronics 739, NEC 8023, C. Itoh Prowriter, Okidata Series® and more.

* Requires Graphics Upgrade.

TG Products JOYSTICK



The EXECUTIVE SECRETARY

All the usual word processor functions
40 or 80 columns: selectable
Real shift key without soldering
Full format control
Full form handling
Keyboard input at print time
Supports any printer
Built in Card File w/Report Generator
Access to external databases, such as
Date Factory and others
Built in Electronic Mail



FEATURES:

- 1/4" solid black Plexiglas
- Heavy duty ball-bearing mechanism
- Highest quality construction
- 12" x 10" no plaster
- (accepts Apple, 2 disk-drives & monitor)
- 8" x 4" bottom plate for stable installation
- Non-skid, non-scratch self rubber foot pads
- No assembly required.

ONLY \$39.95

Suggested retail price



No Credit
Card Penalty

GOLD DISK™ Software
Box 102
Glen Arm, Md. 21057
TOLL FREE 1-800-368-2260

END OF SUMMER
SPECIAL DISCOUNT
FOR ALL STUDENTS
AND PARENTS OF STUDENTS!

"When I need words . . . I use The WORD HANDLER"

It speaks for itself!

The Word Handler is the easiest word processor around...also the most sophisticated. The Word Handler is a single-key command word processing program that runs without hardware modifications to your Apple®, or Apple compatible computer.

Words can't describe how much I love the Word Handler but let me tell you the Word Handler gives me unlimited tabs, incremental spacing, vertical spacing and a two character format. My Word Handler comes with a simple-to-understand manual, complete customer service and free, yes, **free** upgrades.

See your Apple, or Apple compatible computer dealer for sophisticated simplicity... The Word Handler.

Let it speak for you.

The Word Handler's many print features are displayed on the screen so I can see at a glance exactly what will be printed. For example: underlining, **bold** super^{script}, UPPER / lower case. Even / normal justification.

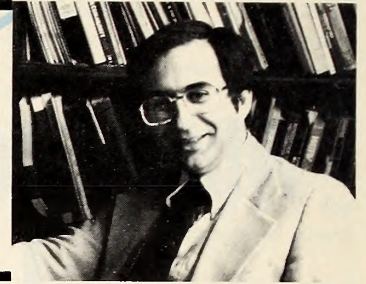
Apple is a registered trademark, of APPLE COMPUTER, INC.

Simply the best . . .
Silicon Valley Systems

Silicon Valley Systems Inc. 1625 El Camino Real #4 Belmont, CA 94002 415-593-4344

Mind Your Business

BY PETER OLIVIERI



We usually start out by sharing with you some comment on the weather or the season, both of which we have plenty of here in New England. We won't do that this time, because there's not much you can say about February except that, in some parts of the country, it's awfully cold. In its defense, many people would point out that February is, after all, the shortest month of the year. And, of course, if you're romantic, Valentine's Day may well induce a special feeling for this particular month. So, as you can see, there isn't anything to say about this month this month, so we'll start right out with "minding our business."

Three Spree. As mentioned last time, a portion of each month's column will be devoted to a discussion of the Apple III and its applications. More and more software is becoming available for the III. Many software vendors like using its operating system (SOS) and have designed packages that take advantage of it and of the machine's special characteristics.

In addition, Apple III users have begun getting in touch to share their experiences; some of their comments appear later on in the column.

Apple Computer offers a good many packages for use with the Apple III, including *VisiCalc III*, *Apple Writer III*, and the Apple III *Mail List Manager*. Let's look at these programs now.

VisiCalc III. This spreadsheet program is essentially the same as the

VisiCalc we all know and love, except that it requires an Apple with at least 96K of memory. The extra memory allows users to work with more data and increases processing speed. Other than that, the main difference between the Apple II and Apple III versions of *VisiCalc* is the ease with which the version for the III can be used. Some of this facility is directly related to the design of the Apple III keyboard. For instance, the III's up and down arrows preclude the need to press the space bar for directional changes.

The *VisiCalc III* manuals from VisiCorp are among the better *VisiCalc* manuals we've seen. The documentation also includes three helpful program listings—one for printing out DIF files, one for printing out worksheets from DIF files, and a third for creating DIF files.

What's the DIF? Since the subject has come up, it seems appropriate here to describe briefly what the heck a DIF file is.

DIF stands for Data Interchange Format. This method was developed as a way of storing data for use by other programs. Having a standard way of saving data would mean that programs offered by one vendor could be made to talk to programs available from another vendor (or to programs written by users themselves). If such a format could be standardized, the development of applications packages would be facilitated and there would be significant advantages to the user.

Thus, since *VisiCalc* allows you to save your worksheet in DIF format, you can use your worksheet data as input to any other programs that recognize DIF files. It's possible, for example, to take a DIF file you've created using *VisiCalc* and use it as input to the *Apple Business Graphics* package. In this manner, you can generate graphs and charts of the data on your spreadsheet.

Apple Writer III. As you know, *Apple Writer III* is Apple Computer's word processing program for the Apple III. You can use it to create, modify, and print text, and it even includes a list processing feature as a standard part of the package. Here are some comments from readers who use the program.

J. Kastura of Kokomo, Indiana, likes *Apple Writer III* very much but hopes to get a solution to a problem he's been having with the program.

"*Apple Writer III* is very useful," writes Kastura, "and is, in general, well documented. . . . The lack of a user guide is an inconvenience. In order to get full use of the Epson MX-80 printer, a null character must be transmitted to the printer. *Apple Writer* has a feature that allows the user to embed control characters in the text for the purpose of controlling a printer; however, I have not found any way to do this. Has anyone had a similar problem? Are there any solutions?"

And from J. Schnell of West Olive, Michigan, who uses *Apple Writer III* in writing architectural specifications for architects, come these comments.

"We use four Apple IIIs, each with an Apple III green monitor, one additional disk drive, and an Epson MX-100/3 printer. . . . We find *Apple Writer III* to be extraordinarily flexible. However, it does have one major drawback. The user doesn't see on the screen exactly what will be printed. We would also like to have the ability to move around larger blocks of text than are currently permitted. The format for using the program is quite easy, however, and should be considered a strong plus. We will never, never go back to using a typewriter.

"Our only problem," continues Schnell, "has to do with the use of the printer. Using Basic, we've been able to use all the features of our Epson printers. However, we have not been able to find any way of printing su-

**DON'T TURN THIS PAGE
UNTIL YOU HAVE CALLED**

NONAGON

800 - 942-2058

415 - 237-4406 (in CA)

SPECIALS:

dbase II, Visicalc, Arcade Machine
16k Ramcard, 5¼" Disk Drive,
80 Column Board.

**WE ARE YOUR ONE STOP SOFTWARE/
HARDWARE SHOP**

P.O. BOX 1486, EL CERRITO, CA 94530

perscripts when using *Apple Writer III*. Has anyone been able to do this?"

W. Hale of San Diego, California, writes in to say that the Apple III (and *Apple Writer III*) is used in an engineering design section at the Military Electronics Division of TRW Corporation.

"*Apple Writer III* works quite well for us and we are pleased with it. We have found the documentation lacking in some areas, particularly in the relationships between the top and bottom entries, top and bottom margins, and what effect these have on the number of printed lines and page intervals." Hale identifies "the inability to see on the screen what the document is going to look like" as the "single, most complained-about problem." This is particularly inconvenient, he adds, when wide and complex page layouts are being dealt with.

Apple III Mail List Manager. This is one of the easiest to use mailing list packages we've seen. It requires a minimum of 128K memory and at least one external disk drive.

A disk can hold a maximum of 960 records. If you want to create new mailing lists by merging records stored on different disks, you need at least two external disk drives. The program comes equipped to print labels using a Qume Sprint 5 or a Silentyte III. If you plan to use a different printer, you'll have to have your system disk modified by your dealer.

The program is menu-driven and allows you to define your mailing format; enter mailing records; find, modify, or delete mailing records; sort mailing records; print or display mailing records; change the format of the labels to be printed; and merge or filter mailing lists.

A mailing list record can, essentially, contain up to six lines of information. These typically include one line apiece for name, company, street, and city/state/zip code. Two extra lines are provided. The user indicates what fields of this record are to be the sort fields (a person's name or zip code, for example). In addition, there's a field for phone numbers and one for label codes. These codes can be of your design, and you can use them later on when you want to retrieve only certain records from the file. This feature is a very convenient one for many list processing applications. The user guide devotes several pages to an explanation of how to use such codes in a mailing list setting.

Searching through the mailing list database can be done in four ways. You can search through all records for a record that matches the characters you've just entered in the primary sort field, search for a similar-sounding primary sort field (an unusual, and nice, feature), search for a match of the characters you've just entered in the secondary sort field, and search by mailing list order (search sequentially).

The *Mail List Manager* user guide is quite good. It's easy to understand and clearly explains all the package features. If you have an application that requires you to produce mailing labels, it would be worthwhile to consider this package seriously. Be advised, however, that if your needs include the addressing and printing of personalized letters using your mailing list file then it may be in your best interests to consider a database management package that includes list processing as one of its features.

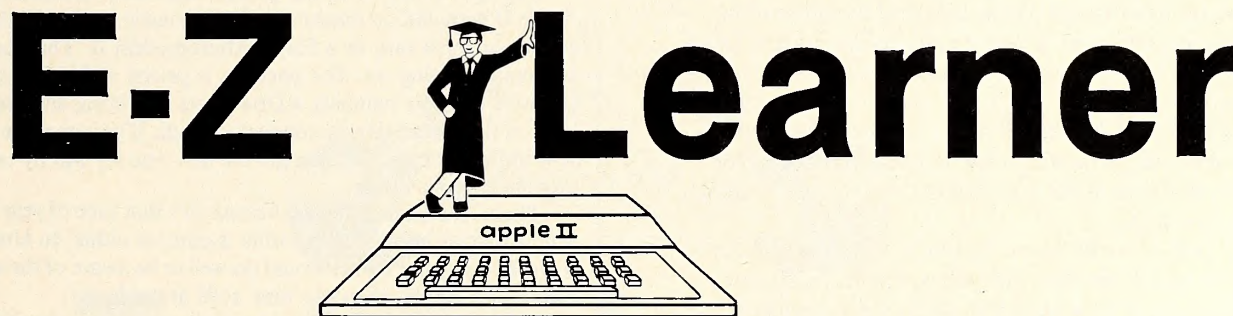
Graphics, Anyone? In last month's column, we discussed a package called *Apple II Business Graphics*. As you'll recall, this package gives Apple II users the capability to create fairly sophisticated bar charts, pie diagrams, and line graphs. In addition, it's easy to use and has excellent documentation.

Well, the same package is available for the Apple III. It's called, uniquely enough, *Apple III Business Graphics* and offers all the features described for the Apple II version. Of course, some of the ways the user interfaces with the program have changed; in particular, the ways that files are handled are different. *Apple III Business Graphics* requires an Apple III with two disk drives and 128K of memory. In addition, the use of the ProFile hard disk drive is possible, although some reconfiguring work must be done first.

Apple Printers Arrive. Apple Computer recently announced the availability of two Apple printers. Both are designed to use fully the features of the Apple II and the Apple III and the majority of software packages available for them.

The Apple Dot Matrix Printer is a fast, high-contrast printer for graphics and many correspondence-quality applications. The printer requires a parallel interface, has a printhead life of more than one hundred million characters, and comes with a heavy-duty motor. It has hi-res graphics output and offers bidirectional print speed of 120 characters per

Go on, bring a nice teacher to your Apple™ . . .



E-Z Learner—a menu-driven program, creates, stores and reviews questions and answers on the subject of your choice. Edit the questions and answers, update, merge or transfer however you wish.

Strain Your Brain

E-Z Learner is ideal for learning large amounts of information. Whatever you are studying customize E-Z Learner to your needs. Different subjects can be stored on a separate files, reviewed individually or merged for major exam review. Missed questions will be repeated at the end of the program until you get them right.

Tricky! Tricky!

Challenge yourself. Have E-Z Learner throw questions

randomly or give the answers to which you must supply the questions. Will E-Z Learner be outsmarted? By encouraging quick thinking, E-Z Learner ensures that the answers you seek are truly learned, not momentarily memorized.

Take a Break

E-Z Learner's "bookmark" allows you to interrupt your study then pick up exactly where you left off. Use E-Z Learner for intensive exams or for occasional mind refreshing. Whenever real learning is important, knowledge is at your fingertips with E-Z Learner. Contact your Apple dealer.

Simply the best . . .

Silicon Valley Systems

Silicon Valley Systems Inc. 1625 El Camino Real #4 Belmont, CA 94002 415-593-4344

END TAX TRAUMA



We have the perfect way to breeze through the most dreaded task of the year. And you can do it on your computer — even if you're a complete novice.

It's called **The Tax Advantage™**. It's fast and it's a cinch to use.

The program takes you line-by-line through Form 1040 and the other most common tax forms. It asks you for information in plain English, and you type in the numbers. That's all there is to it.

The Tax Advantage™ does complex operations like income averaging with a few simple commands. Not only that, but as tax laws change, you can easily update the tax tables.

Another terrific feature is that it automatically computes your taxes with each entry you make. So you know exactly how each line affects your overall tax picture.

Pick up **The Tax Advantage™**. Simply stated, it's the best way to do your taxes.

But hurry. April's almost here.

The Tax Advantage™ is available for the Apple II and Atari 400/800. Price \$59.95.



Continental Software

A Division of Arrays, Inc.

Continental Software Co., 11223 South Hindry Avenue, Los Angeles, California 90045 Telephone (213) 417-8031

Apple II is a registered trademark of Apple Computer, Inc. Atari 400/800 are registered trademarks of Atari, Inc., a division of Warner Communications, Inc.



second. The printer permits multiple pitch and proportional spacing, and it will mix fonts during a single pass. In addition, it can handle cut sheets or tractor-fed paper (either roll or fan folded). The Dot Matrix Printer is priced at around seven hundred dollars.

The Apple Letter Quality Printer, a daisy wheel printer with graphics capability, is designed for high-quality print applications. It requires a serial interface and prints bidirectionally at forty characters per second on individual sheets or continuous forms. Its switch-selectable settings include vertical and horizontal tabs; six or eight lines per inch vertical pitch; ten, twelve, or fifteen characters per inch horizontal pitch; and auto line feed toggle. Pause and form feed user switches simplify printer control. The snap-in multistrike ribbon cartridge is designed to provide four times the life of conventional ribbons, and a full complement of print wheels, including six foreign language character sets, will be available later on. The price of the letter quality printer is about twenty-two hundred dollars.

Revised Dow Jones Software. An enhanced version of the *Dow Jones News and Quotes Reporter* offers Apple II owners who are investors instant access to vital financial and business information through fifteen research databases. This revised software supports eighty-column displays and autodial modems. It also allows users to log on to Tymnet, Telenet, and the Canadian Bell System's Datapac, three major communications networks.

This package gives stockbrokers, financial analysts, and private investors access to one of the world's most comprehensive sources of business information. With it, interested parties can obtain quotes (delayed fifteen minutes) from the major United States stock exchanges; headlines, abstracts, and complete articles from the Dow Jones News Wire, *The Wall Street Journal*, and *Barron's*; and transcripts of the television show *Wall Street Week*. It's also possible to get information from money market services that summarize where experts expect the money markets to go; obtain *Weekly Economic Update*, a summary of key economic events of the week; access databases that provide historical stock market quotes, historical information on a particular company, or detailed financial data on thousands of companies; and get a variety of other information such as sporting news, UPI news, and news of international events. The package also offers access to a twenty-volume encyclopedia.

The *Dow Jones News and Quotes Reporter* (Version 2.0) requires an Apple II with 48K of memory and an acoustic modem with a communications or serial card or a Hayes Micromodem II. This version features automatic logging on. The package is priced at \$135 and includes the software, two user manuals, a Dow Jones password, and one hour of free time on the system during nonpeak periods. If you own the previous version of the package, you can get the new one for \$40 by returning your original to your dealer.

These Are Taxing Times. Friends, it's that time of year again. Yes, it is time that we give to Caesar what is ours, or rather, to Uncle Sam what is his. Every Apple owner would do well to be aware of the advantages of owning an Apple when tax time rolls around.

If you're using your Apple in your business, you already know about using the investment tax credit to reduce your liability, and you know how best to depreciate your equipment. Pros and novices alike may find that it pays to look carefully at their tax guides or consult a professional about the IRS rules concerning computers.

Many users don't realize that significant tax deductions can now be taken for software. If you develop any of your own programs, the cost associated with that activity may be deductible on a current-cost basis. If you've purchased software for use in your business, its cost is also deductible. However, that cost must be depreciated or amortized in the usual way. It's good to remember, too, that there's a gray area concerning software developed outside of a business organization. If you can demonstrate that you bear the risks involved in maintaining the software's operability, then the IRS may allow you to deduct its cost on a current basis.

If you don't use your computer in any business activities, don't despair. While the IRS doesn't permit you to deduct the cost of a hobby, you may be able to deduct a portion of the cost of your computer as an educational expense or a part-time business expense.

Your machine qualifies as a business expense if it is used to generate income on a part-time basis. It is then part of the cost of doing such business and is therefore deductible as a business expense. You'll have to calculate what percentage of the time the computer is being used in such activities, since only that percentage of the machine's cost will be deductible.

The computer can be deducted as an educational expense if you can demonstrate that you use it in order to meet the requirements of your employer to maintain your salary or job. Don't give up on this area. If you use the computer to improve your skills, that may also qualify you to take a deduction. The best strategy is to review the requirements for educational deductions carefully; you may find that the computer qualifies in a variety of ways. And the time you spend getting more information may indeed save you a good deal of money.

If you do deduct a portion of the expenses associated with your Apple, be sure to attach to your tax form a short note that explains your justifications. This extra step shows that some thought was given to the process before such a deduction was taken, and this often makes the difference between being audited and not being audited. As an extra hedge, try to maintain some records of how you used the machine during the year. In a pinch, these may be just what's needed to swing a deduction in your favor.

One final comment. When in doubt, consult a professional. While you may not necessarily go to jail for a mistake, it could cost you dearly in taxes and penalties. Of course, if you did go to jail, it just might provide you with the time you always wanted for getting familiar with your Apple! You decide.

Books for B.U.G.s. Several books that have been released recently may be of interest to some of the members of the Business User Group. Two of the new books are from Apple Computer.

The Personal Guide to Personal Computers by Peter Lundstrom introduces readers to personal computers and their use in the home. The book costs around \$2 and contains about fifty pages. It explains, in easy-to-understand terms, how personal computers are used, how they work, and how to select one.

Perhaps of even greater interest to some of you is a book by Barbara

Gibson called *Personal Computers in Business*. This fifty-page book introduces managers, professionals, and owners of small businesses to the use of the small business computer as a business tool. It is filled with information about how business computers are used in the office, how they work, how to plan for their installation, how to evaluate different systems, and how to estimate costs. It sells for \$2.95.

Both of these books are nicely produced, informative, and easy to read. They are also, obviously, biased toward the Apple and written for the beginner. They are far less of a "how-to" of personal and small computers and much more of an introduction to them.

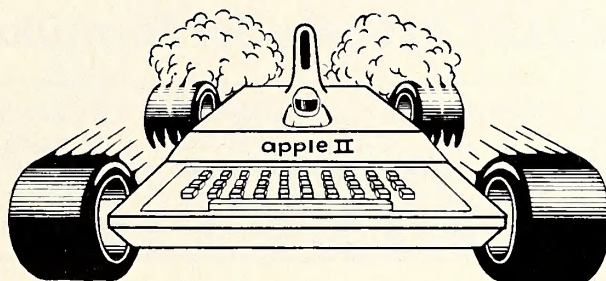
While we're on the subject of books, here's one that is likely to be of particular interest to someone who's considering the use of a computer in a business. It's called *So You Are Thinking About a Small Business Computer*. Priced at \$10.95, it's written by R. G. Canning and N. C. Leeper and published by Prentice-Hall. This is a very nice sourcebook of material that merits the consideration of people who are thinking about computerization. It is, of course, well written and easy to read (or it would never have made it to this column).

The first few chapters are the standard ones and include sections titled "How a Computer Can Help You," "How Computers Work," and "All About Hardware and Software." What distinguishes this book is the depth of coverage and the timeliness of the material. The text explains the differences between eight-bit and sixteen-bit processors quite nicely. Moreover, it provides you with a step-by-step guide to determining your own needs and documenting them before you rush out to buy a new machine. In fact, sample forms to use in doing just that (and instructions about completing them) are included in the appendices.

The book also has some good chapters on word processing, protecting your computer system, and looking toward the future. The appendices include a checklist for evaluating vendors, a listing of major computer suppliers, a glossary, and a reference section detailing sources of information on a variety of topics. If you're considering using a small computer in your business, this may be the book for you. You'll certainly get a good return on your investment.

B.U.G. Call. One of the B.U.G. members is hoping to expand the capabilities of his Apple II to accommodate a variety of new applica-

Speed up your Apple™ without changing the engine . . .



Turbocharger

Speed up DOS to a factor of five!

Turbocharger allows most programs to load in under two seconds. Turbocharger speeds up DOS commands:

- BLOAD
- BRUN
- LOAD
- RUN

Turbocharger automatically date stamps your files and has a built in copy program. Many other useful utilities are included showing you how to use the Turbocharger.

NO modifications to hardware or disk format needed!

That's right—more speed with no engine changes. No Apple user should be without the Turbocharger. The simplicity of use will surprise you. All you need is standard Apple DOS 3.3. If you want to lay down the rubber without laying down the dollars see your Apple Dealer for the Turbocharger.

Simply the best . . .

Silicon Valley Systems

Silicon Valley Systems Inc. 1625 El Camino Real #4 Belmont, CA 94002 415-593-4344

tions. He has asked if any of our readers might be able to help him out.

This reader works at a company that manufactures electronic quality control equipment for the glass container industry. The company has three Apple IIs that are used for word processing, database management, and *VisiCalc*. He'd like to know whether any other readers have found applications packages dealing with printed circuit board design, drafting/computer-aided engineering, production planning/job control, recording data from test equipment, trouble-shooting electronic test equipment, or numerical control programming for their machining equipment. He's also interested in knowing about training packages for use with customers and employees and programs that will assist in translating equipment manuals into foreign languages.

If you can provide information about any programs, applications, or people in these areas, it would be greatly appreciated. Send it along to the B.U.G. and it will be forwarded to your fellow member. This particular use of B.U.G. (for shared problem solving) can be its greatest benefit, so help out if you can!

The Readers Query. A recent note from a reader asked a question that comes up so frequently that it's deserving of some comment here. The question was whether to buy a computer now or wait. The reader's main concerns had to do with whether a machine bought now would be obsolete two years from now and whether the costs might drop significantly before too long.

There is, of course, no easy answer. This is so because the problems we're talking about here are real problems. Prices will come down and the computer you buy may indeed be obsolete soon. Let's look at each of these issues.

Costs will come down. And, as new models are released, the older ones will be offered at sale prices. It's not likely that there will be, instantaneously, such a tremendous drop in prices that you'd be dismayed at having made your purchase. Price reductions tend to be gradual, not precipitous. More important are your own needs. Perhaps the computer will actually save you money; you may be losing out more financially by waiting for a price reduction, since what you are losing is time that the

computer could have been working for you. This is particularly true in business settings.

Obsolescence is a significant concern. The technology is changing so rapidly that some obsolescence is assured. In the early seventies, it would have taken a doctoral student and a grant in six figures to produce a workable voice synthesizer. Now one is available for less than \$150. For another example, just look at what has happened to the calculator market. Something new and better is coming out all the time. If you wait for the best and most up-to-date, you'll find yourself waiting for a long while.

The best thing to do is to buy a computer system that's clearly expandable. Consider that the six-year-old Apple II can do almost everything the brand-new IIe can do through expansion boards, chips, and software.

The machine you get should be able to grow with you as well as with the technology. The better machines are now being designed in this fashion. We think that the present Apples will be around for a while. But, clearly, they are the first generation of microcomputers. As with all technological developments, there will be succeeding (and better) generations.

The saving grace is twofold. First, business users can often enjoy some tax breaks in financing their machines. There are a variety of ways to reduce the real cost of equipment. Second, there is, indeed, a very good market for used computers. There are other small businesses, students, schools, and a wide variety of sources for recovering a good deal of the investment you've made in your computer system.

Our advice to those who are faced with the dilemma of when to buy is: buy now. Buy an expandable system! And remember that, in most cases, you really do get what you pay for.

So long for now.

Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014; (408) 996-1010. Prentice-Hall, Inc., Englewood Cliffs, NJ 07632; (201) 592-2000. VisiCorp, 2895 Zanker Road, San Jose, CA 95134; (408) 946-9000.

VC-DOCUMENTER™

Translates Your VISICALC™ Model Formulas Into English

:F48:+F45*(1-F28)+F30
:F45:+F41-(F37*F24)-F26
:F41:(F39*F37)
:F39:+E39*(1+F35)
:F37:+E37*(1+F33)



F48: 1983 NET INCOME =+ 1983 GROSS INCOME *(1- 1983 TAX RATE %)+ 1983 TAX CREDITS
F45: 1983 GROSS INCOME =+ 1983 REVENUE -(1983 VOLUME * 1983 UNIT COST)- 1983 BURDENS
F41: 1983 REVENUE =(1983 AVER PRICE * 1983 VOLUME)
F39: 1983 AVER PRICE =+ 1982 AVER PRICE *(1+ 1983 INFLATION RATE %)
F37: 1983 VOLUME =+ 1982 VOLUME *(1+ 1983 SALES GROWTH RATE %)

Turns This

Into This

VC-DOCUMENTER outputs a listing of your VISICALC model formulas translated into English by utilizing the Row/Column Headings that are already in your model.

APPLICATIONS

- Provides complete documentation of VISICALC model structure and mathematics for your future reference or to explain your model to others.
- Translates other developer's VISICALC models into plain English for understanding the assumptions behind the numbers.
- Allows VISICALC user to easily verify the accuracy of complex formulas and functions.

Ask your Dealer to demonstrate **VC-DOCUMENTER** on one of your own VISICALC models—OR—if you can't wait, send us your order and we will RUSH you a copy.

(**VC-DOCUMENTER** will soon be available on other systems.)

VC-DOCUMENTER is distributed by DESKTOP SOLUTIONS.

Requires 48K Apple II/II Plus, DOS 3.3, one or more disk drives.

VISICALC is a registered trademark of VisiCorp, Inc. Apple II and Apple II+ are registered trademarks of Apple Computer, Inc.

FEATURES

- Quick-list of translated formulas or full print-out with Address, Label, Value, Command and Equation designations.
- Prints documentation of total or any specified portion of VISICALC model.
- Customizes output to your printer and preference.
- Not limited by model size or formula length.

DESKTOP SOLUTIONS

SEND TO: DESKTOP SOLUTIONS
P.O. Box 35659, Houston, Texas 77235
Phone: (713) 723-6170

☐ Charge my order to: ☐ MasterCard ☐ Visa ☐ Total payment enclosed

Card # _____ Expiration date _____
(If MasterCard, include Interbank # shown above your name)

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Texas residents please add 4% sales tax.

**ONLY
\$49.95**

THE INCREDIBLE JACK.^{T.M.}



PERSONAL
FILING

WORD
PROCESS

CALC

MAILING
LABELS

WILL MAKE YOUR APPLE II THE JACK OF ALL TRADES FOR \$129⁰⁰.

Four applications in one.

The Incredible Jack combines the convenience of a personal filer with the power of a calc package. It handles most word processing tasks with ease. Toss in the ability to sort and print mailing labels, and you have a totally integrated, suprisingly easy to use package that does most of what you bought your Apple for.

Organize information your way.

The Incredible Jack lets you arrange your information in "records" you design yourself using the computer display. Each record may be as little as a mailing label or as large as 60 sheets of legal sized paper.

Word processing made easy.

With a few simple commands you can

master in minutes, you can create letters, memos and reports. To help you edit, Jack lets you insert, delete, and copy portions of text all with automatic word wrap and flush right margins. The Jack does away with the mind boggling control codes and formatting options of other word processing packages.

Automatic decision making.

Jack even allows you to build decision making logic into your file. With English language rules and a powerful IF THEN ELSE function, you can instantly calculate complex discount tables, commission plans, contract terms, or tax rates.

See for yourself.

Try Jack. (You'll need an Apple II

with 16K memory extension and 2 disks.) If you're not convinced it's the best investment you've made since you bought your Apple, send Jack back in good condition within 2 weeks for a full refund.

To order call: (800) 645-4513. For information: (516) 269-1120. To order by mail, enclose \$129.00 plus \$5.00 shipping and handling.

(charge card # and exp. date)



N.Y. residents add 7¼% tax, and send to: Business Solutions, Inc.
60 E. Main St., Kings Park, N.Y. 11754.

THE INCREDIBLE JACK.^{T.M.}

business
solutions

WILL MAKE YOUR APPLE II THE JACK OF ALL TRADES

All About Applesoft

by Doug Carlston

Before we continue our discussion of text files from last month, there's a little item from the November column that needs clarification (a subtle way of saying that there was a mistake).

The dollars and cents format program worked fine except for two minor failings—it couldn't handle whole numbers less than ten, and it often lost a penny due to rounding errors. Well, we're all human. To paraphrase the words of that immortal math instructor Tom Lehrer, "The important thing nowadays is to understand what you are doing rather than to get the right answer."

A number of people sent in corrections that solve the problem. Here is the version provided by John Heiser of Warren, Ohio. His changes are in lines 15 and 22:

```

10 INPUT NUMBER
15 NUMBER = INT (NUMBER * 100 + .001) / 100
20 AS = STR$ (NUMBER)
22 IF INT (NUMBER) = NUMBER THEN AS = AS + ".00"
25 IF MID$ (AS, LEN (AS) - 2, 1) = "." THEN 40
30 AS = AS + "0": GOTO 25
40 IF NUMBER < 1000 THEN 50
45 BS = LEFT$ (AS, LEN (AS) - 6): AS = "," + RIGHT$ (AS, 6)
46 IF LEN (BS) < 4 THEN AS = BS + AS: GOTO 50
47 AS = "," + RIGHT$ (BS, 3) + AS: BS = LEFT$ (BS, LEN (BS) - 3):
  GOTO 46
50 AS = "$" + AS
60 PRINT AS
70 GOTO 10

```

Thanks, John. A more compact routine (submitted by Albert P. Pinto of Atlanta, Georgia) does essentially the same thing. It is listed in the September Open Discussion, on page 27.

There are also some excellent utilities on the market that add some of the missing Basic commands to Applesoft (the Basic command *print using* would ordinarily be available to convert raw numbers to dollars and cents format, but that command never made it into the Applesoft vocabulary). One such utility program is called *Apple Spice*, available from Adventure International. Another is *The Routine Machine*, published by Southwestern Data Systems.

Now let's get back to our work on text files. Last month we developed a simple mailing list program that permitted you to enter a series of names and addresses and write them out to disk as a sequential file. It was a good exercise but had limited practical value, since the program did not permit appending new names to the list at a later date or editing or deleting names from the existing list.

Let's take that simple beginning and build ourselves a full-blown mailing list program. We'll start using random access files. For the time being, we will keep all of our addresses in an array in memory, but later we may want to modify the program so that we can handle lists too long to be loaded entirely into RAM. Using random access files will also give you a chance to see how random file commands differ from sequential file commands.

First, let's list the program. Then we'll try to take it apart.

```

10 DIM A$(4,200):D$ = CHR$ (13) + CHR$ (4)
20 GOTO 500

```

```

40 REM *****
50 REM * SUBROUTINES *
60 REM *****
65 REM
79 REM *** GET INPUT LINE ***
80 REM
81 BS = "": POKE - 16368,0
82 GET C$: IF C$ = CHR$ (13) THEN 87
83 IF C$ = CHR$ (8) AND LEN (BS) > 1 THEN PRINT C$:BS =
  LEFT$ (BS, LEN (BS) - 1): GOTO 82
84 IF C$ = CHR$ (8) THEN PRINT C$: GOTO 81
85 PRINT C$: BS = BS + C$: GOTO 82
87 CALL - 868: PRINT C$: IF LEN (BS) > 25 THEN BS = LEFT$
  (BS,25)
88 RETURN
90 REM
91 REM *** PAUSE ***
92 REM
93 PRINT : PRINT TAB( 8) "PRESS ANY KEY TO CONTINUE";
94 WAIT - 16384,128
95 PRINT : PRINT : POKE - 16368,0: RETURN
97 REM
98 REM ** WRITE LIST TO DISK **
99 REM
100 PRINT D$"OPEN"FILES"L100"
110 FOR X = 1 TO 200
120 PRINT D$"WRITE"FILES"R"X
130 FOR Z = 0 TO 4:AS = A$(Z,X): FOR Y = 1 TO LEN (AS):A1$ =
  MID$ (AS,Y,1): IF A1$ = "," THEN AS = LEFT$ (AS,Y - 1) + "#"
  + RIGHT$ (AS, LEN (AS) - Y)
135 NEXT Y: PRINT AS
140 NEXT Z: IF A$(0,X) = "END" THEN X = 200
150 NEXT X
160 PRINT D$"CLOSE"FILES
170 RETURN
197 REM
198 REM ** READ LIST FROM DISK **
199 REM
200 FOR X = 1 TO 200:A$(0,X) = "END": NEXT : PRINT
  D$"OPEN"FILES"L100"
210 FOR X = 1 TO 200
220 PRINT D$"READ"FILES"R"X
230 FOR Z = 0 TO 4: VTAB 22: INPUT AS: PRINT AS: IF LEN (AS) < 3
  THEN 240
235 FOR Y = 1 TO LEN (AS): IF MID$ (AS,Y,1) = "#" THEN AS =
  LEFT$ (AS,Y - 1) + "," + RIGHT$ (AS, LEN (AS) - Y)
236 NEXT
240 AS(Z,X) = AS: NEXT Z: IF A$(0,X) = "END" THEN X = 200
250 NEXT X: PRINT D$"CLOSE"FILES: RETURN
499 REM
500 REM *****
510 REM * MAIN MENU *
520 REM *****
521 REM
525 HOME : PRINT TAB( 15)"MAILING LIST"
530 VTAB 5: HTAB 8: PRINT "C(HOOSE MAILING LIST)": PRINT
550 HTAB 8: PRINT "A(DD NAMES)"
551 HTAB 8: PRINT "E(DIT EXISTING NAMES)"
552 HTAB 8: PRINT "L(OOK FOR A NAME)"
553 PRINT
555 HTAB 8: PRINT "S(ORT THE LIST)"
560 HTAB 8: PRINT "P(RINT THE LIST)"
565 PRINT : HTAB 8: PRINT "Q(UIT)"
570 VTAB 19: HTAB 8: GET AS

```



```

580 B$ = "CAELSPQ": FOR X = 1 TO LEN (B$): IF A$ = MID$
    (B$,X,1) THEN S = X:X = LEN (B$): NEXT : ON S GOTO
    7000,1000,4000,4000,2000,8000
600 NEXT : GOTO 500
1000 REM *****
1010 REM * INPUT DATA *
1020 REM *****
1030 IF FILE$ = "" THEN 7000
1050 K = 1
1060 K$ = A$(0,K): IF K$ <> "END" THEN K = VAL (K$): GOTO
    1060
1070 PRINT : PRINT "NAME (<RET> IF DONE): ";
1080 GOSUB 80: IF B$ = "" THEN 500
1090 A$(1,K) = B$
1100 FOR X = 1 TO 3: PRINT "ADDRESS LINE ";X;" ": GOSUB
    80:A$(X + 1,K) = B$
1110 NEXT
1120 A$(0,K) = "": FOR X = 1 TO 200: IF A$(0,X) = "END" THEN
    A$(0,K) = STR$ (X):X = 200: NEXT : GOTO 1060
1130 NEXT X: PRINT : INVERSE : PRINT "FILE IS NOW FULL":
    NORMAL : PRINT : GOSUB 90: GOTO 500
2000 REM *****
2010 REM * PRINT LIST *
2020 REM *****
2025 HOME : VTAB 5:P = 0:KT = 0: IF FILE$ = "" THEN 7000
2026 PRINT "OUTPUT TO:": PRINT
2030 PRINT TAB( 8) "S(CREEN)": PRINT : PRINT TAB( 8)
    "P(RINTER)": PRINT : PRINT : PRINT TAB( 8):: GET A$: PRINT :
    IF A$ = "S" THEN 2050
    IF A$ <> "P" THEN 2025
    PRINT D$"PR#1 ":P = 1
    K = 1
    FOR Z = 0 TO 4:A$ = A$(Z,K)
    PRINT A$: NEXT : IF A$(0,K) = "END" THEN 2100
    KT = KT + 1:K = VAL (A$(0,K)): PRINT : IF NOT P AND KT / 3
    = INT (KT / 3) THEN GOSUB 90
    GOTO 2060
    PRINT D$"PR#0": PRINT : IF NOT P THEN GOSUB 90
    GOTO 500
4000 REM *****
4010 REM * LOOK/EDIT FILE *
4020 REM *****
4030 HOME : VTAB 5: IF FILE$ = "" THEN 7000
4040 VTAB 5: INPUT "ENTER NAME: ";A$: PRINT
4050 K = 1
4060 B$ = A$(1,K): IF LEN (A$) > LEN (B$) THEN 4100
4070 FOR X = 1 TO LEN (B$) + 1 - LEN (A$): IF A$ <> MID$
    (B$,X, LEN (A$)) THEN 4090
4080 VTAB 7: FOR Z = 0 TO 4: PRINT TAB( 8):A$(Z,K): NEXT :
    PRINT : PRINT "IS THIS IT?": GET AN$: PRINT :X = 200: IF
    AN$ = "Y" THEN 4200
4090 NEXT X
4100 IF A$(0,K) = "END" THEN PRINT : INVERSE : PRINT "FILE
    NOT FOUND": NORMAL : GOSUB 90: GOTO 500
4110 K = VAL (A$(0,K)): GOTO 4060
4200 REM *****
4210 REM * EDIT ROUTINE *
4220 REM *****
4225 IF S = 4 THEN 500
4230 VTAB 8: FOR X = 1 TO 4: HTAB 4: PRINT "("X)": NEXT :
    PRINT : PRINT "CHANGE WHICH NUMBER?"
    PRINT : PRINT ":(PRESS <D> WHEN DONE)": PRINT : PRINT
    ":(TYPE ": INVERSE : PRINT "DELETE": NORMAL : PRINT
    "ON LINE 1 TO DELETE)": PRINT : GET A$:IF A$ = "D"
    THEN 500
4260 IF VAL (A$) < 1 OR VAL (A$) > 4 THEN 4230
4270 A = VAL (A$): VTAB 7 + A: HTAB 8: GOSUB 80: IF B$ =
    "DELETE" THEN 4300
4280 A$(A,K) = B$: GOTO 4230
4300 REM *****
4310 REM * DELETE A FILE *
4320 REM *****
4330 FOR X = 1 TO 200: IF VAL (A$(0,X)) = K THEN K1 = X:X = 200
    NEXT X:A$(0,K1) = A$(0,K):A$(0,K) = "END": GOTO 500
6000 REM *****
6010 REM * SORT THE FILE *
6020 REM *****
6030 HOME: VTAB 8: HTAB 7: PRINT "NOT YET IMPLEMENTED":
    PRINT: PRINT TAB (7) "SEE NEXT MONTH'S COLUMN":
    GOSUB 90: GOTO 500

```

```

7000 REM *****
7010 REM * CREATE NEW LIST FILE *
7020 REM *****
7030 HOME : VTAB 8
7035 HTAB 8: PRINT "NAME OF LIST?": PRINT : HTAB 8: PRINT
    "PRESS <RET> FOR CATALOG"
7040 PRINT : HTAB 7: INPUT " ";B$: IF B$ = "" THEN PRINT :
    PRINT D$"CATALOG": PRINT : PRINT : GOTO 7035
7050 FILE$ = B$: IF S > 2 THEN GOSUB 200: ON S - 2 GOTO
    4000,4000,6000,2000
7060 PRINT : HTAB 8: PRINT "IS THIS A NEW LIST?": PRINT : HTAB
    8: GET A$: IF A$ = CHR$ (13) THEN PRINT : PRINT
    D$"CATALOG": GOTO 7060
7070 IF A$ <> "Y" THEN GOSUB 200: GOTO 500
7080 PRINT D$"OPEN"FILE$,L100"
7090 PRINT D$"DELETE"FILE$
7100 FOR X = 1 TO 200:A$(0,X) = "END": NEXT : GOSUB 100: IF S
    = 2 THEN 1050
7110 GOTO 500
8000 GOSUB 100: PRINT D$"CATALOG": END
10000 FOR X = 0 TO 200: FOR Z = 0 TO 4: PRINT A$(Z,X): NEXT :
    NEXT

```

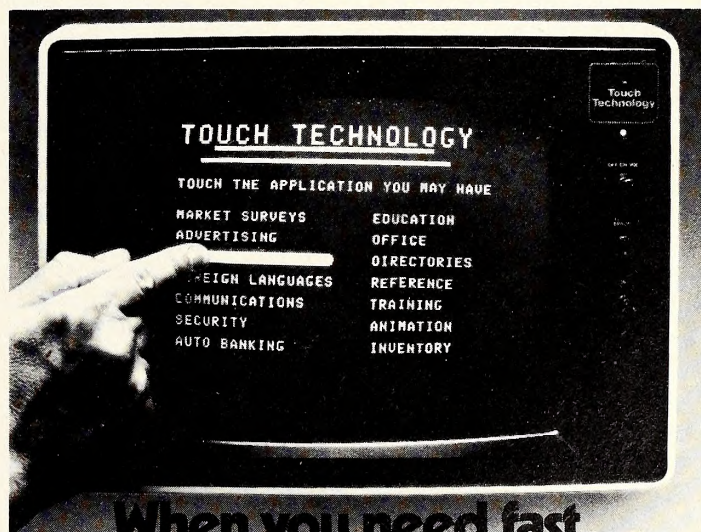
Hold on now. Don't despair. In that whole long program, here is the list of vocabulary that's new:

CALL - 868

The important thing to do whenever confronted with a major task is to break it down into bite-sized pieces. That's the way this program was written, and that's just about the only way to read it without being overwhelmed.

Let's start by tracing program control. After setting up an array in line 10 (and defining D\$, our DOS control character), the program jumps to line 500. This is the main menu, and it is from this section that program control jumps out to all the little sections that manipulate your mailing list.

Take a look at lines 500 through 600. There shouldn't be anything



**When you need fast,
accurate information,
you need Touch Technology.**

Information and graphics at your fingertips. Perfect for shopping malls, restaurants, banks, lobbies, schools and hospitals. Everything you need to start programming including color or green-screen touch monitor, computer interface, cables, demo disk and manual. Easily connects to most micro computers.

Complete packages start at \$1450

Call or Write for Free Brochure

TOUCH TECHNOLOGY, INC.

3 Church Circle, Annapolis, MD 21401

(301) 269-8838

"Information At Your Fingertips"



particularly new in this section; the only complicated bit, line 580, is just that clever branching routine that we described the same month that we were messing around with dollars and cents formatting. `BS` is just a string of all the acceptable characters that one can press to jump to different parts of the program. The `MID$` command finds which character we have pressed and sets `S` to a number from 1 to 7, representing the seven items in the menu.

The first item is `C(hoose Mailing List`. This routine is located in lines 7000 through 7110. Its purpose is to allow you to select the name of the particular list you want to work with. (And, in fact, if you run the program and try to jump directly to one of the other menu items without selecting this one first, you will be directed here nonetheless. More on this later.)

Line 7050 sets the string variable `file$` to the name of the mailing list we are opening. The `if` statement at the end of that line opens the file and reads in all the information currently in that file, using the subroutine beginning at line 200. If you chose something other than `C(hoose Mailing List`, the `if` statement then sends you back to the menu item you originally selected.

The rest of this section is designed to set up a new mailing list. First any existing file of the same name on the disk is deleted (line 7090—*warning*: this can be dangerous, and you might want to build some additional safeguards in here); then each element of the mailing list array, `AS(X,Y)`, is filled with the word *end* in line 7100, and then the array is written out to the disk. Finally, control is returned to the main menu.

Probably the most complicated thing in this whole program is the use of the two-dimensional array `AS(X,Y)`. We use the array to get around constantly having to load and save items to the disk, which is very time-consuming and hard on the hardware to boot (no pun intended). The array is 4 by 200 in size. Each record is stored in the array as follows:

`AS(0,n)` = Pointer to next record
`AS(1,n)` = Name of person
`AS(2,n)` = First address line
`AS(3,n)` = Second address line
`AS(4,n)` = Third address line

The `n` represents the number of that particular record. This array can hold up to 201 records, that is, sets of names and addresses. If you want to make it larger, just change the `dim` statement on line 10 of the program.

The use of a pointer requires a little explanation. Ordinarily, the records are loaded one at a time as we type in our list of favorite names and addresses. Therefore, the pointer for the first record would be 2 (since it would point to the next, or second, record). The second record's pointer would be 3, and so on. This may seem a little silly right now, but the use of pointers to chain records together in this manner makes it possible to sort records several ways and to insert new records in alphabetical order, which may or may not have appeal, depending on how compulsive you are.

The next item on the main menu is `A(dd Names`. The add names routine starts at line 1000. This is the routine that permits you to sit down and enter all of your mailing list data. There are a couple of tricky parts to it, most of them tied up with the use of the record pointer, so let's take it one line at a time.

Line 1030 checks to see if we have chosen a mailing list file yet. If not, we get shipped off to the create-new-file routine at line 7000.

Next we start examining pointers to find the end of our existing mailing list. Line 1060 will loop back on itself until it reads a record pointer filled with the string literal *end*. As you may recall, line 7100 set all pointers to *end* when we first initialized the file.

Having found the end of our mailing list, we set `K` to the value of the first unused record number and begin accepting data input. Lines 1070 and 1080 prompt for and check the first line of input data. If we pressed return without entering data, this is a signal that we have finished entering all of our names, so control is returned to the main menu at line 500.

The actual input routine is the subroutine starting at line 80. This entire routine takes the place of the simple input statement, which would have been preferable except for its inability to handle strings containing commas. As you can see, using the `get` statement is far more cumbersome,

but it does have that one advantage.

Let's take a close look at how the routine works. Line 81 clears our output string and the keyboard buffer. The next line accepts a single character of input and checks to see whether it is a return. If so, it ships us off to line 87, which ties up some loose ends and then returns us whence we came.

Line 83 is necessary to handle the left arrow key, which gets seen as just another keyboard entry, not worthy of any special treatment. Line 84 handles the special case where the left arrow is used to delete the entire string `BS`, something that line 83 is unable to handle because the second parameter of the `left$` instruction cannot be a zero.

Line 85 prints whatever character we have typed. It then concatenates the new character with those typed in earlier and returns us to line 82 to get more.

Line 87 starts with our new vocabulary for the month. *Call* -868 clears the line on which the cursor is located from the cursor position to the right edge of the screen. The final part of line 87 is intended to truncate any input so that it all fits within a record that has a total capacity of only one hundred characters.

That's the big difference between sequential and random files, as you may remember. Random files have records of a fixed length. Line 100 in the program opens a file in which each record is one hundred characters long at most (that's why "*L100*" is added to the end of the open statement). And even this method of truncating everything to twenty-five characters wouldn't be sufficient if all five fields of the array were loaded up to their maximum value. Fortunately, that's not likely to happen.

But let's get back to the input routine starting at line 1000. Line 1090 stores the person's name in `AS(1,K)` with `K` indicating the record number. Then line 1100 loads the three address lines into `AS(2,K)` through `AS(4,K)`. Finally, line 1120 looks for the next empty file and, upon finding it, sets `AS(0,K)` to point to that record. If it can't find an empty file, line 1130 prints a warning message and program control is sent back to the main menu.

Note that up to now all we have created is a list that is stored in memory. Nothing is written to the disk until we press `Q` to quit. This sends us to line 8000, where we are promptly redirected to the subroutine starting at line 100 (no wonder people get dizzy trying to read other people's code!). The file is opened in line 100 and we then set up a loop to write all of our records.

There is a difference here between the way you write sequential files and the way you must write random access files. When we wrote out a sequential file, we put the write command outside the loop and so only passed through it once. However, with a random file, it is necessary to use the write command to indicate which record you want to write to (that's what the characters "*R,X*" at the end of the write command mean—open record number `X`). Everything will be written sequentially to record `X` until we issue a new write command telling the program to write to a different record.

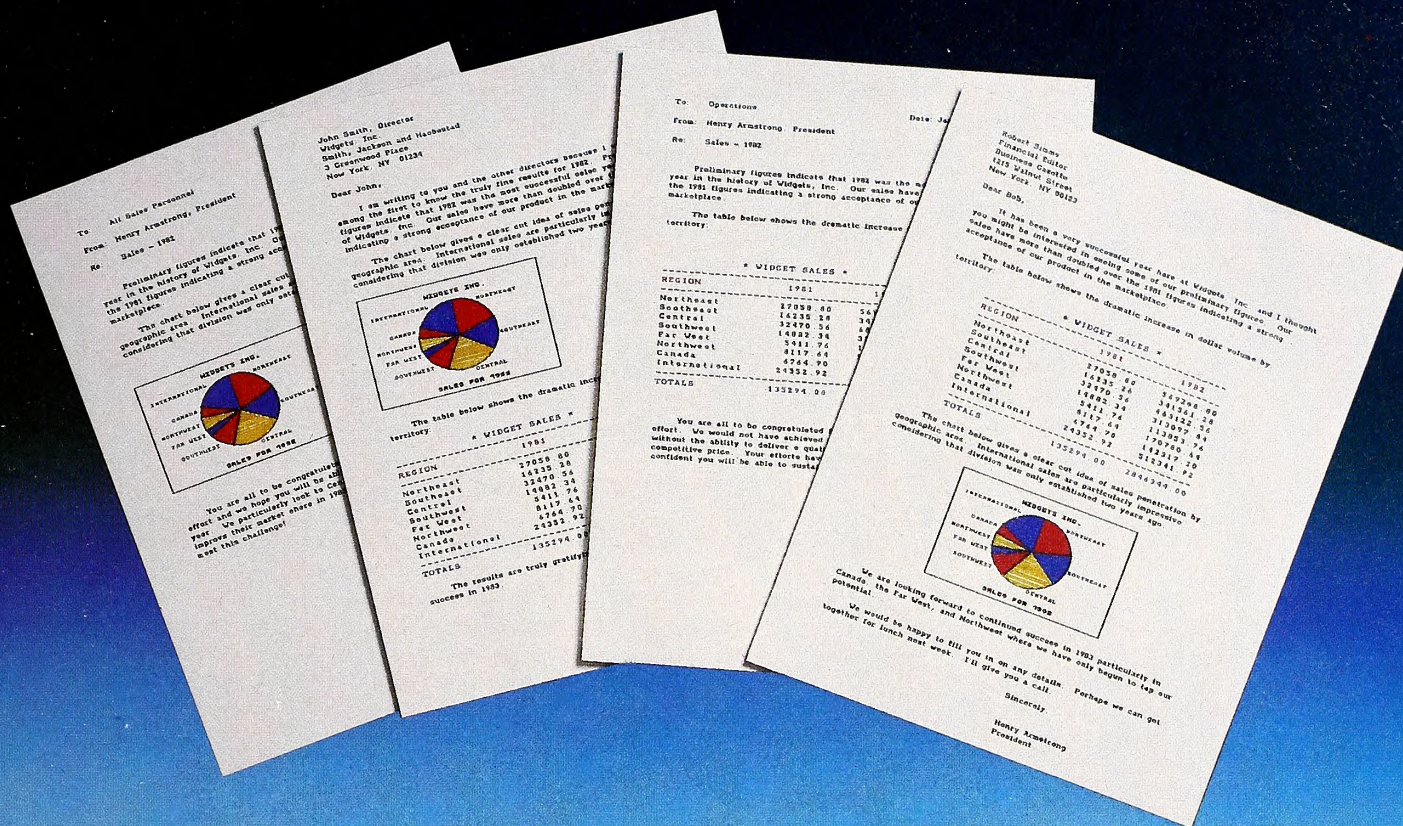
The loop at line 130 does something that might seem a bit strange at first. It checks each string that is about to be written to the disk for commas; if it finds any, it replaces the commas with number (`#`) signs. If we didn't do this, the commas would be understood to mark the end of a field within the record when we tried to read the data back into RAM from the disk, and our information would get hopelessly jumbled.

As an aside, you might want to look at the disk reading routine that starts at line 200. Line 235 cleverly changes all of the number signs in the data file back into commas as it reads the data in. If you think you'll need to use a number sign as part of a record, however, you'll have to come up with some other unlikely character to substitute for the comma.

There is just one more tricky part in the write file routine. Look at line 140. Once we get to a record with a pointer that says *end* we know that there are no more records to write. Therefore, we set `X` to the top value in the `for-next` loop. When the program hits line 150, it drops out of the loop.

Next month we'll take apart the print and edit routines. Then we'll design a couple of sort routines. In the meanwhile, look at the print routines on your own. If you have a printer you might find it useful to modify this routine to print labels, one, two or three up. ■

RANDOM ACCESS IN A PRINTING BUFFER?



YES!

Introducing . . . The IS Pipeline™ Random Access Printing Buffer.

Insert pictures, graphics or spread-sheet data into reports. Duplicate form letters—automatically changing addresses on each. Now, all your programs can work together to produce printed output.

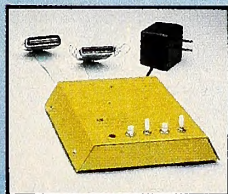
For the first time ever, here is a buffer that not only frees your fast computer from your slow printer but also allows you to rearrange, compose and copy your data on its way to the printer.

- Random Access Printing—stores paragraphs or pictures for printing in any order—any number of times.
- FIFO Printing—conventional first-in first-out operation.
- Compression of data for efficient utilization of memory space.
- Ability to interrupt long-term buffer operations for straight-thru short-term printing.
- Simple Erase feature to clear buffer.
- Automatic duplication capability.
- Easily expandable, by you, from 8K Bytes to 128K Bytes.

The IS Pipeline is Universal—it works with any parallel (Centronics*—style) computer/printer combination. A special version is available for PKASO™ Printer Interfaces.

The IS Pipeline is a self-contained unit with operating manual, cables and power supply included.

For more information on the truly revolutionary IS Pipeline Random Access Printing Buffer, call us today.



Interactive Structures Inc.
146 Montgomery Avenue
Bala Cynwyd, PA 19004
Telephone: (215) 667-1713

*Centronics is a trademark of Centronics Data Computer Corp.

The IS Pipeline™ Random Access Printing Buffer is patent pending



PATCHING
APPLE III
PASCAL

BY JOHN JEPPSON

It seemed easy enough in the beginning, a perfectly straightforward project. Just reassign the Pascal system volume from the built-in floppy drive to ProFile. Somewhere in memory there must surely be a string holding the system volume name. If you find where it is, and change it. . . . Such is the innocence of the uninformed.

There are a lot of files in the Pascal system. With just two floppies it's a mess, swapping disks in and out like a circus juggler. With three floppies it's difficult; with two . . . forget it. Far better to have a hard disk and at least two floppies. Then the system runs fairly smoothly. You put all the accessory files like Editor, Compiler, and Assembler on the hard disk and just the necessary boot files on the boot disk.

Of course those necessary boot files include not only the three SOS files, SOS.Kernel, SOS.Driver, and SOS.Interp, but also the Pascal boot files System.Pascal, System.Miscinfo, and System.Library. And, if you want a turnkey program, you also have to have System.Startup. That's an awful lot of stuff on one little boot disk. Usually you will have to cut down on System.Library or on the number of drivers in SOS.Driver just to make it all fit. And if you have a long System.Startup program you're in trouble. The only practical solution is a two-stage boot. First, the SOS files on one disk. Then, System.Pascal and the others on another disk. That gives you plenty of room, but it's a pain.

Back to Drive One. And, whether it's a one-stage or a two-stage boot, you are stuck with the Pascal system volume in the built-in drive. Whichever disk holds System.Pascal is automatically designated the system volume. Pascal hangs onto it like a leech. Almost every time you turn around, Pascal wants to refer back to the system volume—to that particular disk. If you remove the system volume, Pascal soon will stop everything and ask for it back. And you can't put it back just anywhere like most Apple III disks. You have to put it back in the built-in drive. Pascal won't even recognize the system volume disk in any other drive. Pascal simply pretends the drive is empty and zaps you with a "volume not found" error. After a while you'll just leave the system volume alone and use your external floppies for your own files. It simply isn't worth the swapping in and out.

So there you are with a valuable built-in floppy disk drive dedicated almost exclusively to baby-sitting a single file, System.Pascal. And with no obvious reason why System.Pascal could not just as easily be on the ProFile.

That's not all. Pascal often creates temporary work files that must also go on the system volume—in the built-in drive. There is System.Wrk.Text, which is your work file, if you use it. That must go on the system volume. And there are Pascal's own secret work files that you never see. They also go on the system volume. During an assembly, for example, Pascal creates a short file called Linker.Info on the system volume. If all goes well this file is later removed. But, temporarily at least, it must be there, and it must be on the system volume. Pascal will accept no other. So even with System.Assmblr on the ProFile, you must have the system volume in the built-in drive. The only way your own assembly language program can be assembled from the built-in drive is to transfer it onto the system volume, provided there is room.

Then there is the matter of speed. Pascal is constantly activating the floppies, even though all the relevant files are on hard disk. Floppies are slow, about one-tenth the speed of the ProFile.

And noise. Pascal looks around for its files, beginning with the system volume in the built-in drive and hitting each floppy in turn. If you happen to have left one of the drive doors open, the system will punish you with that horrible rasping noise that sounds like the floppy is tearing itself to shreds. After moving the system volume to ProFile, almost all of this searching is eliminated. Most searches then *begin* with the Pro-

File, where the files are actually to be found.

The Best Laid Plans. So the project was worth doing. Convenience, speed, quiet, and a liberated floppy disk drive, all for persuading Pascal to accept the ProFile as the system volume. But it wasn't quite so simple. Oh yes, the string was there in memory; here and there, and other places too. But no combination of changes solved the problem. A lot of bizarre crashes, but no magical transformation. Back to the drawing boards. . . .

Apple III Pascal was designed for a high degree of compatibility with Apple II Pascal. Apple II Pascal programs can be recompiled and run on the III, and the Apple III compiler can be directed to generate Apple II code. Apple III Pascal can even read Apple II Pascal disk files directly (except some of the system files). A more cynical view might hold that Apple III Pascal is a slightly modified version of Apple II Pascal. But, if so, it is certainly modified to use the speed and power of a much larger machine.

In any event a tremendous amount of useful information can be obtained by studying the available documentation for Apple II Pascal. We particularly recommend the Apple Pascal reference manuals from Apple and the recently released *Call — A.P.P.L.E. In Depth, Number Two: All About Pascal* from the Apple PugetSound Program Library Exchange. The latter volume reprints "Pascal Internals" by Mike Rosing and Keith McLauren, an excellent article that traces the initial boot process for initializing Pascal and provides much valuable information about the structure and operation of the p-machine on Apple II. Much of what we have learned about Apple III Pascal's inner workings has been translated to Apple III from information in that article.

When Apple III is powered up, the first step is a bootstrap process by which SOS.Kernel loads itself into memory and positions itself at locations \$BC00 through \$FFFF in the system memory bank. SOS then loads in the interpreter, SOS.Interp, which is placed in a predefined area of memory below SOS.Kernel. The Pascal interpreter occupies locations \$760E through \$B7FF. Then, before transferring control to the interpreter, SOS loads in the drivers from SOS.Driver and positions them one after another below the interpreter in memory. The drivers are all linked to SOS on a daisy chain extending from the floppy disk drivers. You never see these. They are buried in SOS.Kernel at location \$E899 (in the current version). Then each driver is given an opportunity to initialize itself, and, finally, SOS relinquishes control to the user program by jumping to the first instruction in the interpreter.

As far as SOS is concerned, the interpreter is the program. If the interpreter wants to do clever things, fine. SOS doesn't care, up to a point. In some applications, such as *Apple Writer III*, the interpreter is a stand-alone machine language program. SOS.Interp is *Apple Writer III*. In Business Basic the interpreter is the language Basic (which SOS regards as the program). The language, in turn, runs other programs as subroutines: your Basic programs.

Pascal is a bit more complicated. As in Basic, the Pascal interpreter is the Pascal language, a machine language program. And the interpreter, in turn, runs high-level programs as subroutines. The Pascal interpreter is referred to as the *p-machine*. Its main job is to process sequences of *p-code*, your Pascal programs. It converts p-code instructions into 6502 machine language instructions and executes them.

But before getting around to translating p-code, the interpreter has a lot to do. It must set up the Pascal system within Apple III. It allocates chunks of memory for different purposes, sets up the Pascal execution stack and heap, and assigns various zero-page locations as pointers to all of its own parts in memory. It also sets up a communications area to SOS, called Syscom, and it compiles a list of the drivers that are available and how to get to them. Finally it loads chunks of Pascal program,

p-code, from disk into memory and begins to do whatever the p-code says to do. And the first p-code program loaded is System.Pascal.

Conceptually, there is an extra step in Pascal not present in Basic. In Basic, the interpreter is a machine language program which, in turn, runs various programs written in the language Basic. In Pascal, on the other hand, the Pascal interpreter runs just one Pascal program, System.Pascal. System.Pascal is itself a program written in Pascal; that is, in p-code. In a sense, it is the only Pascal program. Your own Pascal programs are really just subroutines, procedures called up by the program, System.Pascal. This means that System.Pascal itself is always running. That's why Pascal latches on so firmly to the system volume. The system volume contains System.Pascal, a currently active and executing program that the system maintains as a continuously open file.

The Software Swap Meet. So why not just load System.Pascal into memory and run it from there? Why tie up a disk? Well, System.Pascal is actually the coordinating center for the overall Pascal system (the program) of which all the accessory files, such as Editor, Compiler, and Assembler, are parts. It would be a colossal waste of memory to keep the whole thing in RAM.

One of the fundamental precepts of Pascal (on small computers) is that segments of programs reside in memory only while they are active and useful. Unused segments are left on disk and are swapped briefly into memory when called. This preserves RAM memory for data. You can even designate parts of your own programs as separate segments, so that an initialization procedure, for example, will not tie up memory after it is no longer needed. System.Pascal itself is divided into several such segments, only a few of which reside in memory at any one time. But the rest have to be available. Furthermore, the system needs a bit of non-volatile scratch-pad space for work files and for recording various options used in future reboots of the system. Hence the system volume. It is really just a means of providing the system with some nonvolatile memory for its own use.

What is less clear is why the system volume has to be kept in the built-in drive. This may be one of the burdens of evolution, like an appendix. We now suspect that Pascal systems and subsystems have, for

several decades, expected the system volume to be found on Pascal I/O unit 4, which in Apple III is the built-in drive. So now, after extensive development of the Pascal system, many different parts of the system just refer to unit 4, instead of a variable that might easily be reassigned. If true, that is a clear violation of good programming technique. All global constants should be referenced by label so that any constant can be changed with a single reassignment.

It makes some sense to keep the system volume in unit 4 if all your drives are the same quality. Suppose that all your disks are floppies. If you have to tie up one floppy it might just as well be the built-in floppy. At least you can be reasonably sure that it exists. And there is no obvious advantage in switching to some other floppy, which the next person may or may not have purchased. So, if the Pascal developers were thinking of systems with several floppy disk drives, they might not have anticipated a reassignment. But when you buy a hard disk, such as ProFile, reassignment suddenly becomes worthwhile.

It is hard to believe the Pascal writers would have made this error. But it is reasonably certain that if there is a system volume variable, and it is assigned to unit 4, that the assignment is done after the system switches to running in p-code—perhaps in the Initiali segment of System.Pascal. It is not done during the initial setup of the Pascal system by SOS.Interp.

It's true that there is a location in Syscom, Pascal's communications link to SOS, called Sysunit. This location's value is the number of the unit from which the system was booted. SOS.Interp does explicitly load that location with the value 4, which is Pascal's number for the built-in drive. But, unfortunately, when SOS.Interp is patched to load that location with a 5 (unit 5 is the same as D2), the system volume is not affected, although there are some other peculiar effects we shall mention in a moment.

So it really looked for a while as though the p-code of System.Pascal would have to be decompiled. That is a mammoth task, and one that isn't made any easier by the fact that we really don't know how... yet. Fortunately for this project, it turned out to be unnecessary.

We cherish the belief that it is only our preoccupation with the yawning abyss of p-code, and not some more serious defect, that closed our mind for weeks and weeks to what we already knew. Pascal's "Unit #4" is a label, and in Apple III Pascal it is assigned the value .D1. The Rosetta stone.

You see, Pascal keeps its own set of books. Back before there was an Apple III, Pascal was happily doing graceful gymnastics with files. Files were referenced by path name. Input and output were standardized. And Pascal handled all the busy work, automatically. Pascal kept track of which files were open, the current position in files, and even things like prefixes. Pascal also kept a list of all the available devices, numbered in a standard and predictable order. This was the list of Pascal unit numbers. Standard devices, like Console and Graphics, were always assigned the same number, which helped make the system more transportable from one machine to another. It was all done as part of the Pascal system. The Pascal programmer didn't have to mess with it.

Pascal's SOS Runaround. Then along came Apple III. Wouldn't it be nice, they thought, if the operating system could handle files with all the ease and power of Pascal? So that's what was done. SOS was given a great many machine language subroutines to do all those marvelous things with files. Using SOS calls, the programmer can create and manipulate files almost as easily from assembly language as from any higher language. It's great.

Apple III Pascal, however, doesn't use those capabilities. Or at least not many of them. In Apple III's operating system, a single SOS call can search several devices for a particular volume, read its directory, locate a given file, and open a unique pathway to read and write the file's contents. But Pascal ignores that. Pascal uses mainly the Device Read SOS call, which works almost at the level of track and sector (and is actually considered illegal). Pascal searches for the volume. Pascal reads the directory. Pascal finds the file. Pascal even keeps its own prefix. It's really a massive duplication of effort, and a waste of memory since all those SOS routines are right there in RAM memory, between \$BC00 and \$FFFF. But that's why Pascal is such a portable language. It ignores the unique abilities of particular machines.

April 15th is just
around the
corner



The ACCOUNTANT

Finance Data Base System
Optional VisiCalc™ Interface Available

BE A MONEY MASTER

Define up to 63 tax codes and save when you prepare your returns. Available for APPLE™ and IBM™ PC.

"Among bookkeeping programs, Decision Support Software's ACCOUNTANT (\$129) earns high marks and is easy to use."
— Money Magazine, Nov. 1982

(800) 368-2022

Decision Support Software

1438 Ironwood Drive, McLean, VA 22101 (703) 241-8316

Add \$3.00 shipping and handling. Virginia residents add 4%

APPLE™, IBM™, and VisiCalc™ are trademarks of APPLE Computer, Inc., IBM Corp., and VisiCorp, Inc. respectively

Apple Polishing.



New software for your Apple* III. Only from Quark.

Now you can add three **new** Quark software products to your Apple III.

Advanced programs which offer you the technical sophistication you need. With the simplicity of operation you want. All at intelligent prices.

Case-in-point: Catalyst™. With this hard disk program, you'll only have to boot your system once. Which means you may not have to touch another floppy disk all day. And the price, to coin a phrase, is user-friendly. Only \$149.

You'll also be delighted with Discourse™. A spooler that saves you a lot of time. Because it lets you use your computer while you're printing other reports. Plus, you can queue up to 14 documents. The price is \$125.

And if you need an automated appointment calendar, the answer is Quark's new Vigil™. No matter what your Apple III is doing, Vigil will alert you to the next event on your busy schedule. The price is attention-getting, too. Just \$95.

Your dealer wants to show you these exciting new programs today. And while you're there, be sure to ask for our free brochure: Apple Polishing.

Or write us directly.

You'll discover how to put Quark's unique line of software to work for you. And then your Apple III can really shine.

* Apple is a registered trademark of Apple Computer, Inc.

Quark™

1433 Williams, Suite 1102 Denver, CO 80218
(303) 399-1096

When you boot Apple III, SOS loads the drivers and links their addresses together in a daisy chain so they won't get lost. Then SOS assigns each driver in the chain a number, starting with 1. Since the floppies are always at the head of the chain, the numbers begin: .D1 = 1, .D2 = 2, and so on. After the floppies, the numbers continue for all the other devices in whatever order they were loaded from SOS.Driver (which is just the reverse of how they are listed by the *System Configuration* program). Remember that these are SOS device numbers, not Pascal unit numbers. SOS keeps a set of books too.

Then SOS turns control over to Pascal, and right away Pascal wants its own list. Furthermore, Pascal wants the drivers numbered in the standard Pascal manner, not in whatever order they got shoved into SOS.Driver. (Pascal must surely have been regular Navy.) So Pascal compiles its own list; and this is done by SOS.Interp, before the switch to p-code. For each SOS device number in the list, from 1 to no-such-device, SOS.Interp polls the device, finds out what type of device it is, and assigns that device number to the proper Pascal unit number. Thus, it creates a look-up table. And it creates the look-up table just once. Thereafter, whenever Pascal wants unit 4 it goes to the look-up table. "Oh yes, unit 4 is SOS device 1." So Pascal issues a Device Read SOS call to SOS device 1.

The first accompanying program patches SOS.Interp. The sequence of instructions is unchanged until after SOS.Interp has built the look-up table. Then the patch captures the code path and switches the assignments for Pascal units 4 and 9 (or whatever unit number has been assigned to your hard disk). The patch then jumps back to the original code path, and SOS.Interp goes about its business as before. Pascal is none the wiser. When Pascal wants to talk to the system volume it asks for Pascal unit 4 just as it always did. But now, when it goes to the look-up table, it gets the SOS device number of your hard disk instead of the device number of the built-in drive.

How is Pascal to know? Or SOS either? All devices look pretty much the same, just places that send and receive binary bits. Only their names tell them apart, except that their names have been switched. . . . But

everything else goes on as before. Pascal goes right ahead and assigns the volume in Pascal unit 4 as the system volume. But that volume is now the root directory of your hard disk.

We do *not* change the value of Sysunit, the Pascal unit number of the device from which the system was booted. We want Pascal to continue to think the boot device was unit 4, even though unit 4 is now your hard disk. Strangely enough, changing Sysunit doesn't actually affect the system volume assignment anyway. What it seems to do is to cause Pascal to switch to an alternative standard numbering scheme for devices. One floppy's existence is denied altogether. Doubtless Sysunit is more useful in other systems.

SOS turns control over to the Pascal language program by performing a jump to the first instruction in SOS.Interp at location \$760E. The pathway then makes two jumps to \$775F and begins.

\$7767: Issue Close SOS call to "close everything."
 \$776F: Zero the device number look-up table.
 \$77A7: Get device number of Console (SOS call \$84)
 \$77B0: store in \$7694 — will be Pascal unit 1.
 \$77BF: Device number of graphics to \$7696.
 \$77D7: Device number of printer to \$7695.
 \$77EF: Device number of RS232 port to \$769D and \$769E.
 \$780F..\$7825: loop.

Device numbers of floppies — until error
 store in "block devices" \$7697..\$769C (lower table).
 \$7828..\$789F: A loop: For each device number — until error.
 \$7847: Is device already in table?
 \$785D: Is it Console type?
 Yes: if no console in \$7694
 then store there
 else store in upper table (unit numbers 128+).
 \$786C: Is it Graphics type?
 Yes: if no graphics in \$7696 then there; else upper table.
 \$78B7: Is it Printer type?
 Yes: if no printer in \$7695 then there; else upper table.
 \$788C: If character device then assign upper table
 \$7891: else (block device) if any room left in \$7697..\$769C
 then there; else upper table.
 \$789F: Next device number .. end loop.
 \$78A1: Get console device number.
 \$78A7: JSR \$7921 = get its name and open it.
 \$78AA: JSR \$7B71 = set console device status table options.
 \$78AD: JSR \$7BCB = set more console status options.
 \$78C9: Set (SOS) prefix to null.
 \$78D2: Store highest bank number in \$16FE and \$7C5E.
 \$78D8: JMP \$8352 then to \$8603.

This is where we will capture the code path and switch the contents of location \$7697 (originally assigned to SOS device 1 = .D1) with the device number assigned to the hard disk. The latter will be found in the first block device location after the floppies (that is, \$7697 + number of floppies configured). The code path resumes its original course at:

\$8603: Initialize 6502 stack.
 \$8607: Interpreter bank number to zero page \$A8.
 \$860E: "\$00" to zero page \$70 — ? error flag.
 \$861C: SOS call—release all memory segments (except SOS's).
 \$8622..\$8664: Find a four-page memory segment (ID #16)
 put its pointer (three-byte) at \$9F.A0/16A0.

This area is subsequently used as an intermediate I/O buffer for read operations to the file System.Pascal.

\$8666..\$8685: Request two-page memory segment ID #11
 = s-bank pages \$1E..1F.

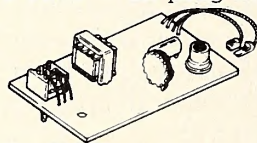
\$8687: Open file System.Miscinfo using SOS call.

The pathname .D1/System.Miscinfo is found as a string at \$838D and transferred to the SOS call parameter list. In the accompanying patch program this pathname is changed to .name/System.Miscinfo (using, of course, whatever device name you have assigned to your hard disk).

\$86AB: If file is not found in .D1 then send error message to console screen saying "Put Pascal system disk in built-in drive." Then wait for return keypress. Repeat as necessary. In the accompanying patch program this message is changed to "Press return when .name is on-line."

HI-FI ADAPTOR FOR THE APPLE®

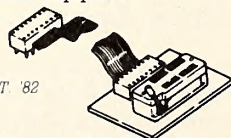
- * Connects your Apple to your stereo or hi-fi
 - * Game sounds and music become exciting.
 - * Easily mounts inside Apple's case — all plug-in connections.
 - * Standard output jack.
 - * Adjustable output level.
- "you will be astonished
 at the results" CREATIVE COMPUTING — AUG '82



HI-FI ADAPTOR — \$25.00

GAME SOCKET EXTENDER #GS-1

- * Changing between paddles, joysticks and other
 - * I/O devices becomes a snap.
 - * Special "Zero-insertion force" female socket mounts on the outside of your Apple.
 - * 24" Ribbon Cable.
- "works well . . . a bargain"



CREATIVE COMPUTING — SEPT. '82

#GS-1 — \$16.95 #GS-2 — \$24.95

#GS-2 same as #GS-1 but with an extra female socket on male plug end (inside Apple's case).

HAPP ELECTRONICS INC.

4640 Island View, Oshkosh, WI 54901
 414 - 231-5128

Wisconsin Residents add 5% Sales Tax

Apple® is a registered trademark of Apple Computer, Inc.

ORDERS UNDER \$20.00, ADD \$1.50 FOR SHIPPING

\$86DA: Load one block from file System.Miscinfo into buffer located \$83FB..\$85FA.

\$86E0: Move byte number \$36 of System.Miscinfo to zero page \$76. This byte determines the size of graphics area allocation. Possible values are: \$C0 = no graphics; \$C8 = 8K bytes; \$D0 = 16K bytes; \$E0 = 32K bytes.

\$86EA: Close file System.Miscinfo.

\$86F0..\$8723: Request segment ID #15 to begin at bank 0 page 00, and extend to correct length of graphics area (or one page if graphics = 0).

\$8725..\$875C: Find segment (ID #12) of length \$FF pages. This will be the Pascal data space. If you can't get \$FF pages, get as many as you can. Store segment addresses: base at \$A3,A4; limit at \$A5,A6.

\$875E..\$87B1: Make three-byte pointers to data space: base of heap @\$98; top @\$9A; Syscom @\$9C.

\$87B3: Zero the Syscom area.

\$87C6..\$8815: Open file System.Pascal using SOS call. Store the file reference number at zero page \$9C. This file thereafter remains open. If not found on .D1 then the same error message is sent until the file is found. The Open SOS call uses the pathname .D1/System.Pascal, which is found as a string at \$836A. In the accompanying patch program that string is changed to .name/System.Pascal.

\$8817..\$883B: Read block 0 of System.Pascal into buffer at \$83FB..\$85FA. This is the segment dictionary.

\$883D..\$8872: Make pointers to parts of segment dictionary and to Syscom + \$60.

\$8875..\$88E2: Transfer segment dictionary info to Syscom + \$60 area.

\$88E4: Zero system bank pages \$1E..1F.

\$88EF: Make three-byte pointers:

Pascal stack @\$C; Sdkbase pseudo register @\$2;
New pointer @\$A.

\$892F: Store xbyte for Pascal data space in \$16E1, 16E3 .. 16EF.

\$893B..\$8971: ?? has several complex JSRs. Apparently loads in the first p-code segment to be run and sets IPC (Interpreter Program Counter = zero page \$58) to point to the first p-code instruction.

\$897D: Stores \$04 (value found at location \$8369) into Sysunit = 5th byte of Syscom.

\$8984: JMP \$8A0D—to p-code evaluation loop.

The p-code evaluation loop is quite simple. It uses extended addressing via the IPC pointer (Interpreter Program Counter = zero page \$58) to fetch a p-code byte from the Pascal program sequence located elsewhere in memory. If the p-code value is in the range \$00..7F then it is a data byte and is simply pushed on the stack. If the value is in the range \$80..FF then it is an instruction. In that case the p-code value is really just an index into a jump table (located \$8200..82FF). First the value is multiplied times two since the jump table is a list of two-byte words. Then an indirect jump is made via the jump table to the code that handles that particular p-code instruction. Upon return, the IPC pointer is incremented to point to the next p-code instruction and the cycle begins again. The disassembler listing is as follows:

```
8A0D: A4 70 LDY 70 ; = "00" (? unless error)
8A0F: D0 0B BNE -> error handler?
8A11: B1 58 LDA @58,Y ; IPC pointer - extended addressing
8A13: 10 ED BPL -> 8A02 ; where it is pushed on stack
8A15: 0A ASL A ; it's negative so double it
8A16: 8D 1A 8A STA 8A1A ; store it in low byte of @JMP
8A19: 6C 00 82 JMP @8200 ; make the indirect jump via table
```

Using the Patch: The accompanying patch program alters the Pascal SOS.Interp file to reassign the Pascal system volume to a hard disk. Instructions and some explanations are interspersed with the code.

The program normally needs to be run only once. It creates a permanent change in the SOS.Interp file on a Pascal boot disk. Thereafter the change becomes effective each time you boot with that disk. Since you are obviously a careful and intelligent person you will, of course, be working only with copies of the Pascal boot files, never with the originals.

The program needs to use the name that you have assigned to your

hard disk. It must be the exact device name assigned in the SOS.Driver file on that same boot disk. Also, the program needs to know how many floppy disk drives are configured (counting the built-in drive). It must be the number of *configured* floppies as recorded in SOS.Driver. This may or may not be the same as the number of floppies you have plugged into your Apple III. The program's success depends on the number of active floppy drivers in memory, not on the number of actual physical drives. (You might want to arrange for these two numbers to be the same.)

Because of the dependence on the device name and on the number of configured floppies, the whole thing will have to be redone if you change either of these parameters. Each time you rerun the patch program you must begin with a fresh, *unmodified*, accurate copy of the Pascal SOS.Interp.

The patch actually assigns the first nonfloppy block device that it finds to the spot normally occupied by .D1 in the look-up table. In most systems the only nonfloppy block device will be a hard disk. But if you do have other block devices you must be careful. Whichever block device appears last in SOS.Driver, according to the list displayed by the *System Configuration* program, will be the device tagged. The Pascal system volume will be the volume name of whatever volume is on the tagged block device during boot. That volume must contain System.Pascal, System.Miscinfo, and System.Library (if used) in its root directory. Normally, of course, you will put all the system files in that root directory.

It is possible that you may obtain (or write) one or more special purpose device drivers for your Apple III. Such drivers can facilitate a variety of nefarious activities such as dissecting the operating system. In fact, the whole patch program could conceivably be done automatically from a driver each time you boot (but with that approach you would have had to do a lot more typing). Such drivers will, of course, be classified either as block devices or as character devices. All device drivers are. If any are block devices, then don't forget about the "last in the list" problem. You will probably have to juggle the order in which such drivers are placed in SOS.Driver. It is done by deleting drivers and reading drivers.

Pascal begins most file searches at the system volume. That is now

Ink Well *version 2.2*

Word Processing for the Apple III™

One Big Advantage (and lots of little ones)

The Big Advantage... Ink Well displays your document on the screen just as it will be printed. You can format your documents on the screen, and know exactly how they will look on paper. Ink Well even shows you where the page breaks will fall.

The Little Advantages... Typewriter Mode, Merge Print, underlining, double strike, over print, headers, footers, page numbering, inbedded control characters, word wrap, right justification, centering, adjustable margins and tabs, find and replace, block movement, and price... only \$185.

Distributed by: Business Computer Center
Carriage Gate Center - 3425 Thomasville Rd.
Tallahassee, FL 32308 - (904) 893-6969

Apple III is a registered trademark of Apple Computer, Inc.

your hard disk, and that is where the files are actually located. There is little hunting about. At this point, however, Pascal does still believe that four files are most likely to be found on .D2 and starts looking there. The files are: Editor, Compiler, Assembler, and Linker. The first time any of these files is called, Pascal takes a quick look in .D2 (Pascal unit 5). The file, of course, is not there. A formal search then begins (and promptly ends) with the system volume. It is possible to correct this remaining search anomaly by changing only four bytes in the file System.Pascal. The bytes occur in strings of the form #5:System.Editor. We merely change the 5 to a 4. But while we are at it we can change a few more bytes and solve another problem as well.

Period Piece. As we have already noted, the system files must all be in the root directory of the system volume, just as they were on the floppy disk. This is rather a pain. It would be nice if all these files could be collected into one subdirectory where they wouldn't clutter up the screen every time you list the root directory's contents. Unfortunately, when looking for system files, Pascal normally looks no further than the root directory of each volume: a relic, no doubt, of Apple II Pascal.

But notice the system file names. They are all in the form System.name. This suggests a trick. Suppose you went through all the various system files and found all the strings in which these names are stored. (There are about twenty, not counting references to the work files.) If, in each case, you then changed the periods to slashes, the names would become System/Pascal, System/Filer, System/Compiler, and so forth. Then, on your hard disk, you could make a subdirectory called System and place within it the files Pascal, Filer, Compiler, and so on. Would not the system then interpret the revised names as pathnames to the subdirectory? Amazingly, it would, and does, provided you have also changed those four search references mentioned above from unit 5 to unit 4. For some unknown reason, if Pascal once fails in a stab at #5:System/Editor it just comes all apart. But #4:System/Editor works fine, perhaps because it is successful on the first try.

Thus the second accompanying program. It too has instructions, if fewer explanations. It is a utility program for changing all the necessary bytes in the various system files. You enter the byte numbers one at a time from the list provided. It only needs to be done once. Of course, it is entirely superfluous to caution you about copying the information on your hard disk to floppy backups before you start messing around.

If you have a disassembler program you might find it interesting to look at the byte number locations in the various files. That, of course, is how we found them: with a disassembler search program. You can also use the disassembler to check that the byte numbers changed were indeed located within the strings described. Someone, somewhere, may have made a typo.

Instructions. This program changes Pascal's SOS.Interp to assign your hard disk as the system volume. The change is a permanent alteration of the disk file and becomes effective when Pascal is rebooted with the modified SOS.Interp. This program needs to be run only once . . . unless you change the configuration of block devices in your computer system.

All System.name files (plus Errors.6502 and Opcodes.6502) must henceforth be on the hard disk. They must be in either:

Root directory: a. Compiled with (\$SETC SubDirectory := false).
b. Pascal system files *not* altered.

System subdirectory: a. Compiled with (\$SETC SubDirectory := true).
b. Pascal system files altered with To.Subdir program.
c. Errors.6502 and Opcodes.6502 must remain in root directory.

Only the system volume designation is changed. All pathname references to .D1, .D2, and so on, whether from the keyboard or from your programs, will continue to work normally.

If your hard disk goes off line while Pascal is running you will get an "Exec Err #9" the next time Pascal looks for the system volume. It is fatal unless you can get the hard disk back on line.

Notes:

1. Valid only for Apple III Pascal — version 1.0.

2. Must be redone if you change the number of floppy disk drives configured into SOS.Driver by the *System Configuration* program.
3. Must be redone if you change the device name of your hard disk (as configured into SOS.Driver).
4. When redone, always start with a clean, unmodified copy of Pascal's SOS.Interp.
5. Device name must start with a period. Do *not* end it with a "/." Examples: ".P," ".Profile," ".Bytesalot"
See rules: *Standard Device Drivers Manual*, page 15.
The name you supply must be the name assigned in SOS.Driver.
6. If you have more than one hard disk (or other block device that is not on the floppy drive daisy chain), then the last such driver listed in SOS.Driver will be assigned.
7. In the *remarks* below, addresses are given in hexadecimal and refer to locations that SOS.Interp will occupy when booted into memory.
8. In the *program lines* these addresses are decimal and refer to positions relative to the beginning of the program buffer.

Patch Apple III Pascal SOS.Interp File

```

program patch;
($SETC SubDirectory := true *)
var
  buf : packed array [0..17919] of 0..255; (* 35 blocks *)
  count, Loc, i : integer;
  floppies : 1..4;
  infile, outfile : file;
  source, devname, pathname, file1, file2,
    ctrls1, ctrls2, message : string;
procedure error (s : string);
begin
  writeln;
  writeln;
  writeln (s, chr(7));
  exit (program);
end;
procedure getinfo;
begin
  writeln (chr (28));
  writeln ('Utility: Patch SOS.INTERP to reassign Pascal system
    volume');
  writeln;
  writeln;
  writeln ('Pathname of Pascal interpreter file');
  write ('      (default = ".D2/SOS.INTERP")');
  readln (source);
  if source = '' then source := '.D2/SOS.INTERP';
  reset (infile, source);
  writeln;
  write ('Number of CONFIGURED floppy drives (counting built-in): ');
  readln (floppies);
  if not (floppies in [1..4])
    then error ('That is impossible!');
  writeln;
  write ('Device name assigned to hard disk drive: ');
  readln (devname);
  if ( (pos ('.', devname) <> 1)
    or (not (length (devname) in [2..15]))
    or (pos ('/', devname) <> 0) )
    then error ('Invalid device name');
  writeln;
  writeln;
  writeln ('.....processing.....');
  (* Read sos.interp file into buffer *)
  fillchar (buf, sizeof (buf), 0);
  count := blockread (infile, buf, 35, 0);
  (* If unmodified Pascal SOS.INTERP then $78D9 = $52; $78DA =
    $83 *)
  if ((buf[729] <> 82) or (buf[730] <> 131))
    then error ('File is not unmodified Pascal SOS.INTERP');
  (* Close infile and reopen with rewrite — BLOCKWRITE is dangerous
    when extending a file opened with reset *)
  close (infile);
  rewrite (outfile, source);
end; (* getinfo *)

```



```

procedure extend;
begin
(*Put one page of zeros between header and body of interpreter: First
move body (length $41F2 = 16882 bytes) to right by 256 bytes. Then
zero the intervening bytes. *)
  moveright (buf[14], buf[270], 16882);
  for i := 0 to 255 do buf[14+i] := 0;
(* Change header start address: from $760E to $750E
Change header interpreter length: from $41F2 to $42F2 *)
  buf[11] := 117; buf[13] := 66;
end; (* extend *)
procedure capture;
begin
(* Place instruction "JMP 760E" at (new) interpreter start at $750E *)
  buf[14] := 76; buf[15] := 14; buf[16] := 118;
(* Capture codepath at location $78D8 (instruction "JMP 8352").
Change the instruction to "JMP 7520," which points to the new area. *)
  buf[985] := 32; buf[986] := 117;
end; (* capture *)
procedure switch;

```

The SOS device number of .D1 will have been stored at \$7697; the SOS device number of the hard disk at \$7697 plus the number of floppies. The following instructions switch these two and then jump back to the original code path. These instructions will begin at \$7520 in the new area.

```

LDA    7697
STA    751F
LDA    76xx    ; $7697 + number floppies
STA    7697
LDA    751F
STA    76xx
JMP    8352    ; place code was headed when captured

```

To continue with the Pascal code:

```

begin
Loc := 151 + floppies;
  buf[32] := 173;  buf[33] := 151;  buf[34] := 118;

```

```

  buf[35] := 141;  buf[36] := 31;  buf[37] := 117;
  buf[38] := 173;  buf[39] := Loc;  buf[40] := 118;
  buf[41] := 141;  buf[42] := 151;  buf[43] := 118;
  buf[44] := 173;  buf[45] := 31;  buf[46] := 117;
  buf[47] := 141;  buf[48] := Loc;  buf[49] := 118;
  buf[50] := 76;  buf[51] := 82;  buf[52] := 131;
end; (* switch *)
procedure newPathnames;
begin
(*$IFC SubDirectory *)
  file1 := '/SYSTEM/PASCAL';
  file2 := '/SYSTEM/MISCINFO';
(*$ELSEC *)
  file1 := '/SYSTEM.PASCAL';
  file2 := '/SYSTEM.MISCINFO';
(*$ENDC *)
(* Place pathname to SYSTEM.PASCAL at $836A *)
  pathname := concat (devname, file1);
  buf[3690] := length (pathname);
  for i := 1 to length (pathname) do
    buf[3690 + i] := ord (pathname[i]);
(* Place pathname to SYSTEM.MISCINFO at $838D *)
  pathname := concat (devname, file2);
  buf[3725] := length (pathname);
  for i := 1 to length (pathname) do
    buf[3725 + i] := ord (pathname[i]);
end; (* newPathnames *)
procedure newMessage;
(* Place new error message in string beginning at $83B0 *)
begin
(* move cursor to (0,23) and beep *)
  ctrl1 := 'xxxx';
  ctrl1[1] := chr (26); ctrl1[2] := chr (0);
  ctrl1[3] := chr (23); ctrl1[4] := chr (7);
(* clear to end of line *)
  ctrl2 := 'x';
  ctrl2[1] := chr (31);
  message := concat (ctrl1, 'Press RETURN when "', devname,
    '" is on-line.', ctrl2);
  buf[3760] := length (message);

```

DATA BASE III

Designed For The Apple III*

Totally User Definable To Meet Your Needs

Automatic Data Syntax Checking

Easy Screen Design

Supports The Profile*

Preformatted Fields

Calculated Fields

At Your Local Dealer
Or Order Direct:

Creative Software
6081 Barbados Ave.
Cypress, CA 90630
(714) 893-4695

Report Generator Includes:

User Definable Custom Layouts

Auto Page Numbering

Calculations

Totaling

Averaging

Counting

List \$175.00

Prepaid or C.O.D.

CA Residence Add

6% Sales Tax



Limited Only By Your Imagination!

*Apple III & Profile Are Trademarks of Apple Computer Inc.


```

for i := 1 to length (message) do
  buf[3760 + i] := ord (message[i]);
end; (* newMessage *)
procedure replaceFile;
(* Write new SOS.INTERP back to disk - it is now one block longer *)
begin
  count := blockwrite (outfile, buf, count+1, 0);
  close (outfile, lock);
  writeln;
  writeln;
  writeln ('DONE');
end; (* replaceFile *)
begin (* main program *)
  getinfo;
  extend;
  capture;
  switch;
  newPathnames;
  newMessage;
  replaceFile;
end.

```

This next program alters Pascal system files in the subdirectory.

- A. Changes four unit number references in the file System.Pascal from #5 to #4; for instance #5:System.Editor becomes #4:System.Editor. This causes Pascal to begin searching for the accessory files on the system volume (now the hard disk) instead of on .D2. It is also required to help the changes in B work properly.
- B. Changes strings in the various system files from System.name to System/name. This causes Pascal to look for files in the subdirectory System. It does *not* affect the various work files. Pascal will still put all work files in the hard disk root directory.

Instructions:

1. Modify SOS.Interp (using the other patch program) with the compiler option (\$SETC SubDirectory := true). This causes the new pathnames in SOS.Interp to be in the subdirectory format.
2. Make a subdirectory: .name/System (where .name is the device name of your hard disk). Transfer all the system files into this subdirectory, but leave off the prefix System.. For convenience you may also put the following files in this subdirectory: Library.Code, Libmap.Code, Setup.Code, Aiiformat.Code. But the files Opcodes.6502 and Errors.6502 must remain in the root directory. Note: It is okay to have both of the following files in subdirectory System at the same time:

file Library (derived from System.Library)
file Library.Code (a program that always had that name)

Pascal will not confuse them.

The directory structure should now appear:

```

/PROFILE      (volume name of hard disk)
  SYSTEM      (subdirectory name)
    PASCAL     (files in subdirectory)
    MISCINFO
    EDITOR
    STARTUP    (if used)
    LIBRARY
    and so on.

```

3. Run this program supplying information requested as follows:

- A. Change byte value: ASCII 5 to ASCII 4

In: Byte numbers:

Pascal ----- 13,002; 13,032; 13,062; 13,114

- B. Change byte value: ASCII . to ASCII /

In: Byte numbers:

Pascal ----- 10,418; 10,930; 12,476; 13,010;
13,040; 13,070; 13,096; 13,122;
13,524; 13,560; 17,008; 21,312

Filer ----- 25,916

Linker ----- 2,550; 2,686

Editor ----- 7,760

Compiler----- 26,728

You must also alter the following nonsystem files:

Setup.Code----- 3,576

Libmap.Code----- 2,802

Library.Code----- 958; 3,282; 3,794; 4,306

Alter Pascal System Files

```

program toSubDir;
var
  source : string;
  newchar : char;
  number : integer;
  first : boolean;
procedure error (s : string);
begin
  writeln;
  writeln;
  writeln (chr (7), s);
  exit (program);
end;
procedure getfile;
var
  instr : string;
begin
  write ('(ESC,RTN to quit) -- Pathname of file? ');
  if not first then
    write ('(default = ', source, '): ');
  readln (instr);
  if instr <> '' then source := instr;
  if source = '' then error ('no source');
  if source[1] = chr (27) then exit (program);
end;
procedure getcharacter;
var
  inchar : char;
begin
  write ('new character ("4" or "/"?) ');
  if not first then
    write ('(default = "", newchar, "") ');
  read (keyboard, inchar);
  if inchar = chr (27) then exit (program);
  if inchar in ['4', '/'] then newchar := inchar
  else if first then error ('bad change character');
  writeln (newchar);
end;
procedure getnumber;
begin
  write ('Byte number to change: ');
  readln (number);
end;
procedure change;
var
  buf : packed array [0..511] of 0..255;
  infile : file;
  count, block, byte : integer;
begin
  reset (infile, source);
  block := number div 512;
  byte := number mod 512;
  count := blockread (infile, buf, 1, block);
  buf [byte] := ord (newchar);
  count := blockwrite (infile, buf, count, block);
  close (infile);
  writeln;
  writeln ('file ', source, ' ', byte, ' ', number, ' is now ', newchar, '');
end;
begin
  writeln;
  writeln ('Modify Pascal SYSTEM Files for use in Subdirectory');
  source := '';
  newchar := 'x';
  first := true;
  while 1 = 1 do
    begin
      writeln;
      writeln;
      getfile;
      getcharacter;
      getnumber;
      change;
      first := false;
    end;
  end.

```


**Apple
II**

Quality Disk Software from **SPECTRUM**

**IBM
PC**

PERSONAL FINANCE MASTER

The premier personal and small business financial system. Covering all types of accounts including check registers, savings, money market, loan, credit card and other asset or liability accounts, the system has these features:

- Monthly Transaction Reports
- Budgets Income & Expense
- Reconciles to Bank Statements
- Prints Checks & Mailing Labels
- Automatic Year-End Rollover
- Prepares a Net Worth Report
- Searches for Transactions
- Handles Split Transactions
- User-Friendly Data Entry Forms
- Fast Machine Language Routines
- Extensive Error Trapping
- HI-RES Expense/Income Plots

For Apple II (48K) & IBM PC \$75.00
Manual & Demo Disk only \$15.00

COLOR CALENDAR

Got a busy calendar? Organize it with Color Calendar. Whether it's birthdays, appointments, business meetings or a regular office schedule, this program is the perfect way to schedule your activities. The calendar display is a beautiful **HI-RES** color graphics calendar of the selected month with each scheduled day highlighted in color. Using the daily schedule, you can review any day of the month and schedule an event or activity in any one of 20 time slots.

For Apple II (48K) \$30.00

BUSINESS SOFTWARE SERIES

Both Programs \$250.00

A user-friendly yet comprehensive double-entry accounting system employing screen-oriented data input forms, extensive error-trapping, data validation and special routines for high speed operation. The series includes these two modules:

GENERAL LEDGER: A complete accounting system with these features:

- Up to 500 accounts and 500 transactions per month.
- Interactive on-screen transaction journal
- Prints checks and mailing labels.
- Produces these reports:
 - Transactions Journal
 - Balance Sheet
 - Account Ledgers
 - Account Listings
 - Income Statement

For Apple II (48K) & IBM PC \$150.00

ACCOUNTS RECEIVABLE

A flexible system with these features

- Up to 500 accounts and up to 500 invoices per diskette.
- Prints invoices, customer statements & address labels.
- Interfaces to General Ledger.
- Interactive screen-based invoice work sheet.
- Produces these reports
 - Aged Receivables
 - Sales Analysis
 - Account Listings
 - Customer Balances

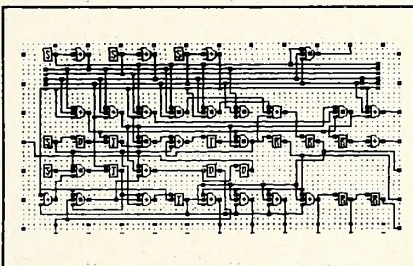
For Apple II (48K) & IBM PC (2 DRIVES) \$150.00

LOGIC DESIGNER & SIMULATOR

An interactive **HI-RES** graphics program for designing and simulating digital logic systems. Drawing directly on the screen the user interconnects gates, including **NAND, NOR, INVERTER, EX-OR, T-FLOP, JK-FLOP, D-FLOP, RS-FLOP, USER-DEFINED MACRO** and **N-BIT SHIFT REGISTER** types. Network descriptions for the simulation routines are generated automatically.

The program is capable of simulating the bit-time response of any logic network responding to user-defined source patterns. It will simulate networks of up to 1000 gates. Includes a source pattern editor, **MACRO** editor and network editor. Produces a fan-out report. Simulation output is a string of 1's & 0's representing the state of user selected gates for each bit time of the simulation.

A typical page of a logic drawing looks like this:



For Apple II (48K) & IBM PC (2 DRIVES) \$250.00

MANUAL AND DEMO DISK: Instruction Manual and demo disk \$30.00

MATHEMATICS SERIES

The Series Includes These 4 Programs:

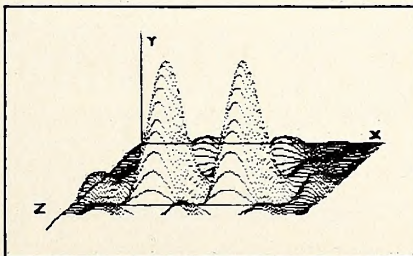
STATISTICAL ANALYSIS I: This menu driven program performs **LINEAR REGRESSION** analysis, determines the mean, standard deviation and plots the frequency distribution of user-supplied data sets.

NUMERICAL ANALYSIS: **HI-RES** 2-Dimensional plot of any function. Automatic scaling. At your option, the program will plot the function, plot the **INTEGRAL**, plot the **DERIVATIVE**, determine the **ROOTS, MAXIMA, MINIMA** and **INTEGRAL VALUE**.

MATRIX: A general purpose, menu driven program for determining the **INVERSE** and **DETERMINANT** of any matrix, as well as the **SOLUTION** to any set of **SIMULTANEOUS LINEAR EQUATIONS**.

3-D SURFACE PLOTTER: Explore the **ELEGANCE** and **BEAUTY** of **MATHEMATICS** by creating **HI-RES PLOTS** of 3-dimensional surfaces from any 3-variable equation. Disk save and recall routines for plots. Menu driven to vary surface parameters. Hidden line or transparent plotting.

For Apple II & IBM PC \$50.00

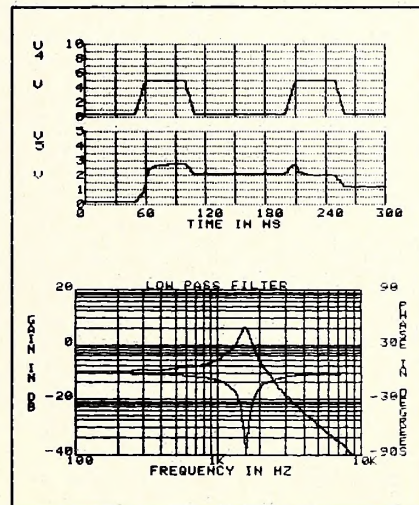


μCAP

Microcomputer Circuit Analysis Program

Tired of trial & error circuit design? Analyze and debug your designs before you build them. With **μCAP** you simply sketch your circuit diagram on the CRT screen and run an **AC, DC** or **TRANSIENT ANALYSIS**. Your circuit may consist of **RESISTORS, CAPACITORS, INDUCTORS, DIODES, BATTERIES, BIPOLAR** or **MOS TRANSISTORS, OPAMPS, TRANSFORMERS**, and **SINUSOIDAL** or **USER-DEFINED TIME DEPENDENT VOLTAGE SOURCES**. **μCAP** can analyze any such network containing up to 40 separate nodes. Includes a user controlled **MACRO** library for modelling complex components such as **OPAMPS** and **Transistors**.

Typical **μCAP AC** and **Transient Analysis** graphs:



For Apple II (48K) & IBM PC (2 DRIVES) \$475.00
Manual & Demo Disk \$30.00

ORDERING INSTRUCTIONS: All programs are supplied on disk and run on Apple II (48K) with a Single Disk Drive or IBM PC (64K) with Single Disk Drive unless otherwise noted. Detailed instructions included. Orders shipped within 5 days. Card users include card number. Add \$2.00 postage and handling with each order. California residents add 6½% sales tax. Foreign orders add \$5.00 postage and handling per product.



**SPECTRUM
SOFTWARE**

690 W. Fremont Ave.
Sunnyvale, CA 94087



FOR PHONE ORDERS:
(408) 738-4387

DEALER INQUIRIES INVITED.

THE PASCAL PATH

By Jim Merritt

Tools of the Craft, Part 20

Greetings from the land down under! Although even the most enthusiastic columnist needs an occasional holiday, the Softalk presses never stop. Consequently, this issue's stroll down the Path meanders through the lovely country of New Zealand, where both the botanical and electronic Apples coexist in splendor and harmony.

Rebuilding the Home. In *Cable*, which we have been developing and studying for the last few months, we have a program that permits convenient, though rudimentary, manipulation of a very primitive set of data. You'll remember that *Cable* was designed to permit the establishment and maintenance of a two-dimensional matrix representing a "Town" full of "Homes," where a Home models a residence and its occupants in the form of data relevant to a cable television franchise. Our initial Home consisted of nothing more than an account number, where a zero value indicated an empty (or nonsubscribing) dwelling.

```
CONST
  NoSubscriber = 0;
  MaxAcctNum = MaxInt;
TYPE
  AcctNumType =
    NoSubscriber .. MaxAcctNum;
  Home =
    AcctNumType;
```

Of course, no real cable television concern would be satisfied with such a limited model. In addition to an account number, even the smallest firm would want to be able to record a subscriber's name, billing address (if different from the residence address), and telephone number. If premium channels are available, there should be some means of distinguishing "premium" subscribers from "basic rate" customers. For purposes of scheduling preventive maintenance, the holder of a cable television franchise may also wish to keep a record of the date when a service representative was last dispatched to a particular address. Sophisticated systems might even keep logs that summarize all the comments or complaints sent to the company from a given home; the computer could then be used to correlate neighborhood service complaints in order to do a better job of isolating problems in the cable network itself.

It's clear that such diverse sets of data cannot all be squeezed down into a single elementary datum. If we want to store more data for each Home, then the definition of a Home must be enhanced. Of course, a Home could itself be an array, containing several data items. This would turn a Town into a matrix of at least three dimensions—one index for the Street-

Name, one for the HouseNumber, and at least one for selecting a specific datum from among the cluster that would comprise the new model of a Home.

There's a snag, though. All the elements in an array must share the same data type. The array that is constructed from Integers cannot also contain Booleans, and vice versa. Of course, a clever programmer can find a way to use an Integer value as if it were a Boolean one, or to make an ARRAY OF Integer serve the same purpose as an ARRAY OF Char. However, such measures produce tricky, obscure programs. In a pinch, you can always use a wrench as a hammer, too, but no competent workman would deliberately choose a wrench for the job of driving a nail when a hammer is readily available.

Records. Pascal does indeed permit us to "glue" several dissimilar data together, in the form of a *record*. In order to make the *Cable* program more responsive to the business it serves, we will redefine a Home to be a record and so transform Streets and Towns into matrices of records.

As a rule of thumb, you may define and use a record anywhere that an array or matrix would also be appropriate. Figure 1 presents the syntax diagram for a record definition. In this discussion, we'll examine all but the *PACKED* and *CASE* options, which will be covered in future columns.

Let's decide to change a Home so that it contains an account number, a personal name, and a billing address, including city name, two-

letter state abbreviation, and nine-character postal code. (Remember, zip codes will soon be growing, and *Cable* should accommodate the change!) Let's also include a ten-digit phone number, the date of the last service call, and a notation as to whether a given subscriber should be billed at the basic or premium rate. To accomplish all this, we may remove the old definition of Home from the *Cable* program and replace it with the following:

```
Date =
  RECORD
    Month
      : (Jan, Feb, Mar, Apr, May, Jun, Jul, Aug,
        Sep, Oct, Nov, Dec);
    Day
      : 1 .. 31;
    Year
      : 1950 .. 2049; (* one century *)
  END (* Date *);
Home =
  RECORD
    AcctNum
      : AcctNumType;
    Name
      : String[24];
    BillAddress
      : RECORD
        Street,
        City
          : String[24];
        State
          : String[2];
        PostCode
          : String[9];
      END (* BillAddress *);
    Phone
      : String[10];
    Rate
```

RECORD DECLARATION

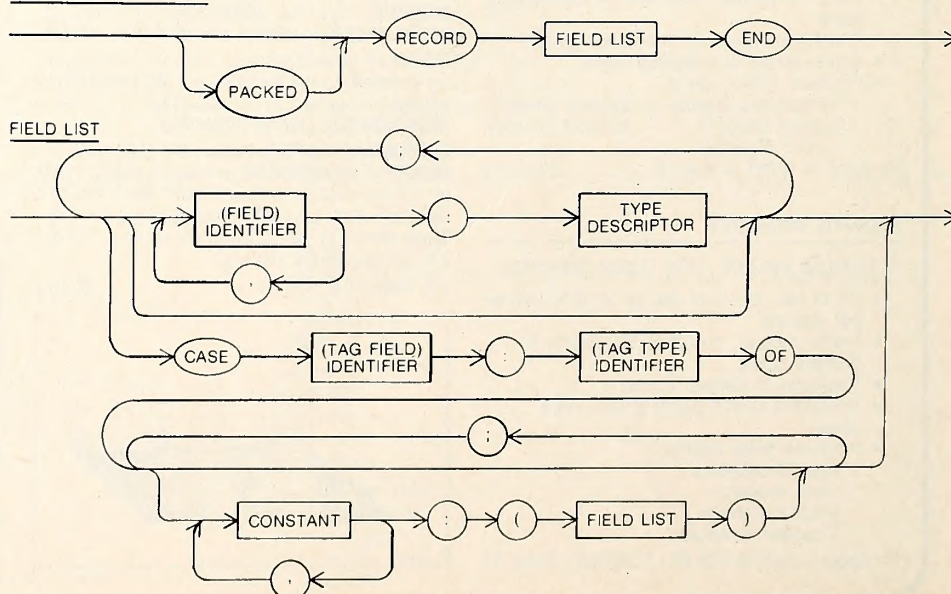


Figure 1. Record declaration.


```

: (Basic, Premium);
LastService
: Date;
END (* Home *);

```

The Pascal definition of our new Home looks very much like what it is: an aggregate of several individual variables, each with its own name and type. Each of the record's constituent variables is called a *field* of the record. Just as we had to add an index to an array name in order to access any individual array element, so must we add a *field descriptor* to a record name in order to access any particular field. A field descriptor consists of a period followed by the name of the selected field. For instance, suppose we declare a variable H to be of type Home. We would refer to H's AcctNum field as "H.AcctNum". "H.Phone" refers to the Phone field of H. "H.Rate" is the name of H's Rate field.

Like an array element, a record field may be given any type except one based on files. Record fields may themselves be records or arrays, as demonstrated by the BillAddress and LastService fields of Home. Each is a record; BillAddress's record structure is declared explicitly in the Home definition, while LastService is a record because its declared type, Date, is a record type. To access the Street field of BillAddress in the Home variable H, you would write "H.BillAddress.Street", not "H.Street". To access LastService's month field, you'd use "H.LastService.Month".

Now look carefully at the following declarations:

```

TYPE
First=
RECORD
State
: (Big, Little);
Counter
: Integer;
END (* First *);
Second=
RECORD
State
: String[2];
Inner
: RECORD
State
: -1 .. 1;
ProdCode
: Char;
END (* Second.Inner *);
END (* Second *);
VAR
State
: Integer;
Rec1
: First;
Rec2
: Second;

```

At first glance, it might seem as if the identifier "State" is used far too often. In the past, we have carefully avoided declaring two or more objects with the same name at the same declaration level, since we know that the compiler is duty bound to detect and complain of such situations. Yet, the code given earlier is correct. To see why, examine these assignment statements:

```

(* 1 *) State := 43;
(* 2 *) Rec1.State := Little;

```

```

(* 3 *) Rec2.State := 'NZ';
(* 4 *) Rec2.Inner.State := 0;

```

The first statement refers to the Integer variable, the second to a field in Rec1 that has been given an explicitly enumerated (and therefore anonymous) type, the third to a String field within Rec2, and the last to an Integer sub-range field in a record that is itself part of Rec2. The fact of the matter is, no two objects in these declarations actually have the same name. The Integer variable State is separate and distinct from any of the record fields named State, and all of these fields are separate and distinct from one another, because the name of each "State" field is not complete unless prefixed with the name of its parent variable (and the names of any parent fields, as in "Rec2.Inner.State"). The compiler detects no ambiguities, because there

are none; the prefixes that must be attached to each field name render the field unique to the compiler.

In order to avoid confusion, then, the compiler usually *requires* the programmer to refer to all variables and record fields by their full names. While this can be cumbersome, as we'll soon see, it does give us a great deal of freedom in naming record fields. The following incorrect record declaration, however, abuses our freedom, and will be rejected by the compiler as ambiguous:

```

VAR
BRec
: RECORD
Confusing
: Integer;
Middle

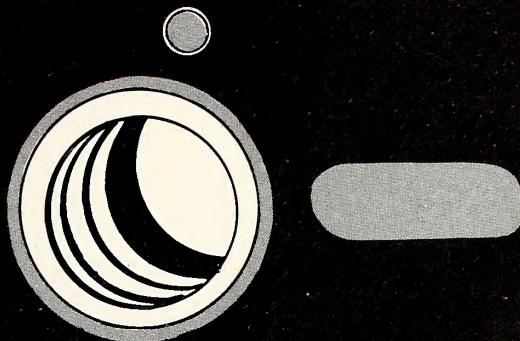
```

48K
Apple II/II+
Applesoft
DOS 3.3
Printer Optional

\$30

MICRO COOKBOOK

What's for dinner decisions made in an instant



**Tell Micro Cookbook what you have —VOILA!
It'll tell you what you can make**

- Select a recipe according to ingredients you have on hand
- Enter your own specialties or modify ours
- Select a recipe by classification & ingredients, ie: French, beef, cheese
- Create your own cookbook
- Adjusts each recipe for number of servings

PLUS Hundreds of International Recipes

- Nutrition & calorie guide
- Table of measurements & equivalents
- Full screen displays & ultra fast
- Food buying & storage techniques
- Glossary of cooking terms
- On-line instructions
- Completely menu driven
- Many print functions provided

ORDER NOW VISA, Mastercard or checks accepted

Virtual Combinatics, P.O. Box 755, Rockport, MA 01966 617-546-6553

Apple is the registered trademark of Apple Computer, Inc.

MA residents add 5% sales tax

WITH-CLAUSE

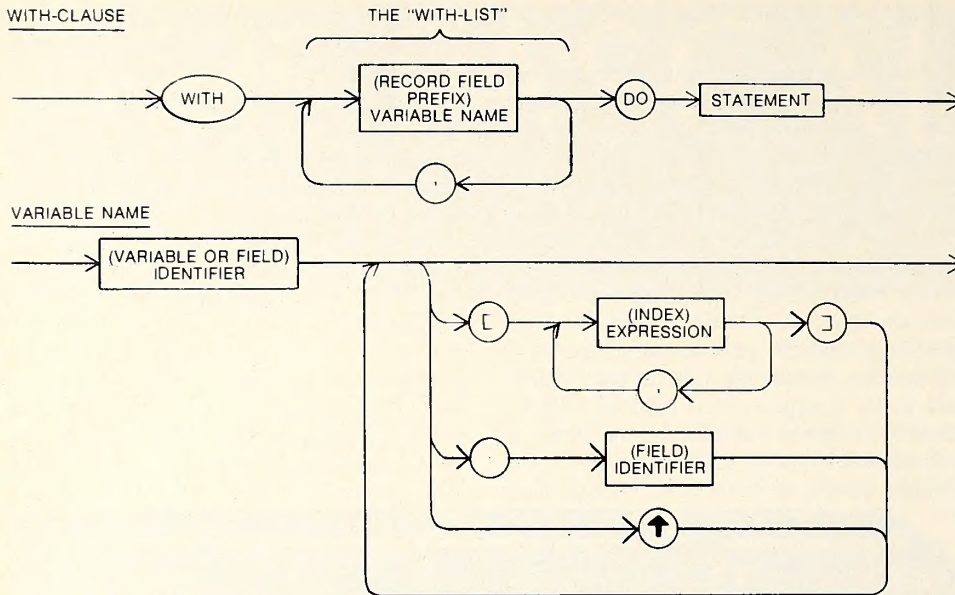


Figure 2. WITH-clause.

```

:Char;
Confusing
:Boolean;
END (* BRec *);

```

When two objects have been defined within the same declaration area, you can decide whether or not they are ambiguous with respect to one another by writing out their full names. If the full names of the two objects are different, the compiler can distinguish between the objects. Applied to the example just given, this test would show that two different fields

have precisely the same full name, "BRec.Confusing", and are therefore ambiguously—in correctly—defined.

Getting Chummy WITH Records. Suppose you have a Home variable H and you want to set the LastService date to September 16, 1957. As things stand, you would have to write the following code:

```

H.LastService.Month := Sep;
H.LastService.Day := 16;
H.LastService.Year := 1957;

```

That's a lot of writing, most of it unnecessary. Now, consider a more efficient equivalent:

```

WITH H.LastService DO
BEGIN
  Month := Sep;
  Day := 16;
  Year := 1957;
END;

```

Pascal's WITH-clause—used to good advantage in the second example—permits you to create special "zones" within your program where record field references may be abbreviated. Instead of having to call record fields by their full names, you may place yourself on a "first name basis," thus decreasing the wordiness of your programs.

Figure 2 is the syntax diagram for the WITH-clause; notice that any WITH affects only one statement, although that statement may of course be a compound of several statements, bracketed by BEGIN and END. The list of names given in a WITH-clause may include only valid field name prefixes; that is, only record variable names (for example, "H") or partial record field specifications (for example, "H.BillAddress") are acceptable components of a WITH-list.

To see how the WITH-clause works, let's consider an example:

```

PROGRAM
WithTest;
VAR
  I
  :Integer;
  Rec

```

```

:RECORD
  C
  :Char;
  I
  :Integer;
END (* Rec *);
Rec2
:RECORD
  I
  :Char;
  C
  :Integer;
END;
BEGIN (* WithTest *)
  I := 0;
  Rec.I := 0;
  Rec2.I := 'C';
  WriteLn('I = ', I);
  WriteLn('Rec.I = ', Rec.I);
  WriteLn('Rec2.I = ', Rec2.I);
  (* NOTE: You'd rarely use a WITH-clause for
  a single statement, especially for one as
  trivial as this, but we're trying to illustrate a
  point as simply as possible here. *)
  WITH Rec2, Rec DO
    I := 7;
    WriteLn;
    WriteLn('I = ', I);
    WriteLn('Rec.I = ', Rec.I);
    WriteLn('Rec2.I = ', Rec2.I);
  END (* WithTest *);

```

In WithTest's declaration area, we define an Integer variable I and then two records, each of which contains a field named I. The "I" field in Rec may hold an Integer, while that in Rec2 may contain only Char values. The first three assignments in the program body serve to initialize the variable I and the two "I" fields. No initialization of the "C" fields is performed because they're not used in this program. (Even so, good programming practice suggests that they should be initialized. The rule has been broken here so as to keep the size of WithTest to a minimum.) Next come statements that display the initial contents of the three objects in question.

Upon encountering the WITH-clause, the Apple Pascal compiler stores its list of prefixes and goes on to process the assignment statement that is guarded by the WITH. At once, it is confronted with the identifier I.

Whenever a WITH-clause is active, the compiler assumes that any identifier that could be a variable name is, in fact, only part of a full object name. Consequently, the compiler's first reaction is to scan its list of prefixes, concatenating each to I, until it succeeds in constructing a valid object name, or until all attempts to do so have failed. If the WITH-list scan fails completely, then the compiler concludes (as it would have in the first place had no WITH been active) that the identifier in question must be a complete object name. Analysis of the identifier then proceeds on that basis. Note that the Apple Pascal compiler scans its WITH-list in reverse order, which is a quirk that's not mandated by the Pascal language definition itself. Still, this aberration is significant, as we'll see shortly.

In the case of WithTest, the scan succeeds on the first try, as "Rec.I" is the full name of an actual record field. (Remember, "Rec" was the last item in the original WITH-list.) After generating the p-code that assigns 7 to Rec.I, the



COLOR SLIDES FROM YOUR APPLE*

COMPUTERTM SLIDE EXPRESS

Turns your Apple II* Hi Res Graphics into 35mm Color Slides

Have slides made from:

- Apple Business Graphics*
- Executive Briefing System†
- Visiplot†
- Other 33 or 34 Sector Binary Picture Files

Slides for

- Meetings • Conferences
 - Lectures • Trade Shows
- for only **\$6.00 per slide**

(\$30.00 minimum)

Turnabout Time - 5 Days

For information call or write:

VISUAL HORIZONS

180 Metro Park, Rochester, NY 14623
(716) 424-5300

*Trademarks of Apple Computer Corp. †Trademark of Lotus Corp. ‡Trademark of Personal Computer, Inc. Computer Slide Express is a trademark of Visual Horizons, Inc.

compiler passes on to process the display statements that conclude the program.

All this being the case, you should expect the final values of I, Rec.I, and Rec2.I to be 0, 7, and 'C', respectively. This is in fact what happens, as demonstrated on the display screen, when you compile and execute WithTest.

Now let's modify the program, reversing the order of the items in the WITH-list, and attempt recompilation. The compiler complains of Error 129 ("Type conflict of operands") when it tries to process the assignment to "I" that is guarded by the WITH-clause. In this case, "I" is now equivalent to "Rec2.I", because "Rec2" is the new final item in the WITH-list. Since Rec2.I is a Char variable, the Integer constant 7 may not be placed in it, and the compiler very rightly issues an error message.

The situation in WithTest is an unfortunate one; such a subtle thing as the order of items in a WITH-list should not affect the compilation of a program. The problem really stems from the fact that, with both Rec and Rec2 in the WITH-list, "I" can validly refer either to Rec.I or to Rec2.I. The question is, which? Some Pascal compilers disallow this kind of confusion altogether and refuse to process the WITH-clause given in WithTest. Others, including the Apple version, make an arbitrary choice to resolve the problem. (And not all compilers make the same arbitrary choice, or scan the WITH-list in the same order!) Whether to view this compiler behavior as a nasty "bug" or a convenient "feature" is entirely up to you. In general, though, it's a good idea to avoid the use of ambiguous WITH-lists. Not only will this practice help to eliminate confusion for you, it will also contribute to the production of programs that will compile under systems other than Apple Pascal.

Here's one final piece of advice concerning WITH: Bear in mind that the effect of any WITH-clause extends only to the text of the statement guarded by it, *not* to the text of any procedures or functions that are called by that statement. Thus, in a statement such as "WITH MyRec DO SomeProc", where SomeProc is a PROCEDURE, the WITH-clause is worthless, as WITH cannot act upon any of the statements within SomeProc's body.

RAMming a Growing Town into a Tiny Apple. When Home consisted merely of an account number, the model of a single Home occupied only two bytes in RAM; in other words, SizeOf(Home) returned the value 2, and SizeOf(Town) therefore returned 7992. Now that Home is a somewhat more sophisticated record structure, SizeOf(Home) takes up 114 bytes. If we were to retain the old structure of a Town (four streets, each containing 999 houses), the new SizeOf(Town) would be 455,544 bytes! With a maximum RAM complement of 65,536 bytes (only some of which are available for your programs), the Apple II cannot begin to accommodate such a monster. It cannot even contain just one Street, since 999 Homes would require 113,886 bytes. In fact, no array or record defined in Apple Pascal may occupy more than 16,384 bytes of RAM. Because of this limita-

tion, the compiler issues an error message (#399, "implementation restriction") upon encountering the declaration of the Street type.

Even seemingly trivial alterations to key data structures can force massive changes in a program's memory requirements. Adding just one byte to the base type of an array that contains 1,000 elements increases the total memory consumption of the associated program by 1,000 bytes. Since Town is an array that includes 3,996 Homes, it is folly to increase the size of a Home from 2 bytes to 114.

Programmers are always needing more memory than their computers provide. When your data structures grow too large for your computer, you have two avenues of recourse: decreasing the gross size of large structures or employing smaller data types in building them. In the case of *Cable*, we can shorten a Street, decrease the number of Streets in a Town, eliminate information fields from a Home, or do a little bit of each. Of course, the clever reader will realize that we may also rewrite the program so that it deals with only a small segment of a large Town at any given time, storing the remainder on disk. Such advanced techniques, however, are best left for a future discussion.

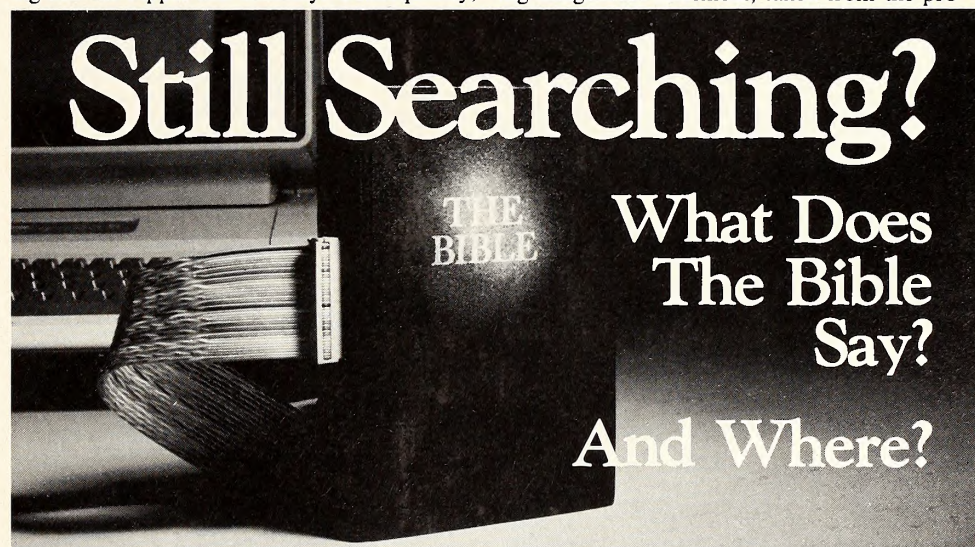
For now, let's assume that the company using the *Cable* program absolutely requires all the information stored in our new version of Home; that is, we do not have the option of modifying the record definition. This being so, it would be futile to decrease the number of Streets in a Town, since even one Street is too big for the Apple II's memory. Consequently,

what we must do is decrease the number of Homes on a Street. It's easily done; we need only change the constant MaxHNum, then recompile.

For purposes of discussion, we'll assume that MaxHNum now has the value 10. In other words, house numbers on any street will range from 1 to 10. Why use such a small number? Program code and data compete for memory resources within your Apple, so it's generally a good idea to "shrink" large arrays temporarily, during initial program development. This leaves ample room within memory for the developing program itself to grow to the size and complexity required to deal with the task at hand. Once the program is finished and works well, you may enlarge any "restricted" arrays to more appropriate sizes, depending on the amount of unused RAM that remains.

Now for the Hard Part. Unfortunately, changing the definition of a Home is only part of the job we face in upgrading *Cable*. Now that the data definition has changed, the code we wrote to access, display, and modify Home data is obsolete. More to the point, if you make the changes just mentioned, the new version of *Cable* will fail to compile. This is because data and program code are ultimately inseparable; if you change the structure or nature of your data, you must almost always change at least part of every program that accesses or manipulates that data.

As an example of the interdependency between programs and data, consider the following assignment statement, taken from the pro-



Still Searching?

What Does The Bible Say? And Where?

Now you can use computer technology to search the Bible on any subject. With THE WORD processor (including a disk copy of the complete KJV Bible text) you can create indexes on keywords. Or phrases. Even on concepts. A full spectrum of text search functions allows detailed analysis for the real student of the Bible.

Print or display selected verses and/or references for personal study or Bible classes. Build your own computerized library of research material.

THE WORD processor

\$199.95*

Bible Research Systems • 8804 Wildridge Drive • Austin, Texas 78759 • (512) 346-2181

Requires 48K, 1 disk drive, APPLE, TRS-80, or IBM-PC**

*Plus \$3.00 postage/handling

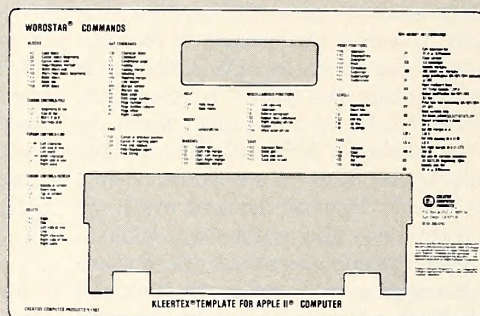
**Trademarks of APPLE Computer, Inc., Tandy Corp., and IBM Corp., respectively.

IF YOU HAVE AN APPLE II® WE HAVE A TIME-SAVER FOR YOU!



\$19.95 Each
(Single-sided)

\$32.95 Each
(Combined reversible)



KLEERTEX® TEMPLATE

- ALPHABETICAL LISTING OF PROGRAM COMMANDS
- QUICK ACCESS
- EASY TO READ
- FITS OVER KEYBOARD
- NON-GLARE SURFACE
- DURABLE PLASTIC
- COLOR COORDINATED

APPLE II and APPLE WRITER II are registered trademarks of Apple Computer, Inc. WORDSTAR and MAIL-MERGE are registered trademarks of Micropro International Corporation. VISICALC is a registered trademark of Visicorp. dBASE II is a registered trademark of Ashton-Tate. Creative Computer Products is an independent company, specializing in Sophisticated Solutions for computer operators.

CONTACT YOUR LOCAL DEALER
OR MAIL ORDER FORM TODAY TO:



P.O. Box 85152-MB134
San Diego, California 92138
(619) 268-0793

CUT HERE

Please send me the following KLEERTEX® Templates:

- ___ APPLE WRITER II® Commands (\$19.95 each)
- ___ WORDSTAR®-MAIL-MERGE® Commands (\$19.95 each)
- ___ VISICALC® Commands (\$19.95 each)
- ___ dBASE II® Commands (\$19.95 each)
- ___ APPLE WRITER II®/VISICALC® Commands (Reversible \$32.95 each)
- ___ WORDSTAR®-MAIL-MERGE®/VISICALC® Commands (Reversible \$32.95 each)

I WANT TO PAY FOR KLEERTEX® Template(s) AS FOLLOWS:

- | | |
|--|--------------------------------------|
| <input type="checkbox"/> Check Enclosed | <input type="checkbox"/> VISA |
| <input type="checkbox"/> Money Order | <input type="checkbox"/> Master Card |
| <input type="checkbox"/> Send Catalog Only | |

Add \$1.95 shipping and handling
(California residents add 6% sales tax)

(PLEASE PRINT CLEARLY)

CARD NO. _____ EXP. DATE _____

SIGNATURE _____

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

☐ Please send catalog of other products you carry for the APPLE II®



© CREATIVE COMPUTER PRODUCTS™ 1982

DEALER INQUIRIES WELCOMED



cedure NewTown:

T[Redwood][HNow] := NoSubscriber;

Recall that NoSubscriber is a constant, equivalent to the Integer value 0. Given the new definition of Home, T[Redwood][HNow] is no longer simply a number. Thus, the assignment just given would be tagged by the compiler as "illegal."

Code such as that just given is said to be extremely "data-sensitive," as it is most intolerant of changes in the data structures it manipulates. In this case, the assignment statement embodies assumptions—about the multidimensional matrix nature of T, and about the composition of the Home data type. After a modification to any of the types Town, Street, or Home, these assumptions would almost certainly fail to hold—thus rendering the statement inappropriate and obsolete. In contrast,

T[SNow] := T[Redwood]

makes fewer assumptions about the composition of T and none at all about that of an individual Home, so it will survive more extensive modifications to the data definitions. In fact, so long as T can be considered as an ARRAY OF Street, indexed by values of type StreetName, the assignment "T[SNow] := T[Redwood]" works, no matter how Street or Home is defined.

When you design a program, one of your aims should be to permit easy modification of fundamental data structures. You can do this by treating data-sensitive code most carefully, in accordance with three rules:

1. Minimize it.
2. Whenever possible, gather it all together in one part of a program.
3. Make it highly conspicuous in the program listing, especially when it cannot be concentrated in a single place.

When you change a data structure, you must find all the code that is sensitive to that structure and modify it to respect the new definition. As it turns out, *Cable* obeys the first and second rules, at least as far as the Home data type is concerned, by concentrating its small amount of Home-sensitive code in the three routines—DisplayHome, NewTown, and ChangeTown.

Notice that DisplayTown contains no Home-sensitive code because it relies on DisplayHome to do the actual work of displaying each individual Home. DisplayTown's code concerns itself instead with determining which Homes are to be displayed during a given session, and with directing DisplayHome to each such Home in turn. None of these activities requires a knowledge of Home's structure.

To improve DisplayHome, you must decide upon an appropriate display format for the enlarged information set and then code the necessary data conversions and output statements. Remember that DisplayHome is not only used by DisplayTown, but also by ChangeTown; the display format you choose must suit the needs of both routines.

Only about a third of ChangeTown's large

live!

alphaSyntauri™



Live music on your
Apple* computer?

Yes! the alphaSyntauri™
a hands-on digital musical
instrument, the first truly
soft instrument, puts you
in command...

4 or 5-octave keyboard with
software for:

Creating—instruments, sound
effects

Performing—8 voices, split
keyboard, sustain and
portamento footpedals

Recording—16 independent
tracks, sequencing, speed
control

Learning—music theory and
keyboard skills

Composing—polyphonic score
print-out of recordings*

*available December 1982

Tell me more!

name _____

address _____

state _____ zip _____

phone () _____

☐ demo record (I am enclosing
\$2.00)

Syntauri corp., Dept. I
3506 Waverley Street
Palo Alto, CA 94306

Contact Syntauri for your
local Syntauri/Apple dealer.

Educators contact us for liter-
ature on Computer Assisted
Instruction in music.

* trademark of Apple Computer Inc.

body really needs to know how a Home is constructed; this is the code that actually acquires the new information from the user and puts that information into a Home. The rest of ChangeTown merely governs the Home-by-Home scan of the area of the Town selected by the user. In addition to modifying the Home-sensitive code, you might also isolate it in a subsidiary routine named ChangeHome (analogous to DisplayHome), which would control the interactive updating of a single Home. Doing so would be an example of "planning ahead" for even more changes to the Home data structure.

For completeness, you could also implement NewHome, which would empty a single Home by filling it with a "matched set" of "empty" values. NewTown could then scan through a Town, calling NewHome to do the actual initialization of a Home. However, NewTown itself is so small that it almost seems silly to create a "slave" routine for it. Whether you put the Home-sensitive code in a separate routine or modify it in place within NewTown, your challenge will be to choose a sensible set of field values that constitutes an "empty" Home.

A Second Anniversary Contest. We've concerned ourselves here with the general issues involved in improving any substantial program, illustrating our points with examples taken from *Cable*. Yet we have not actually gone so far as to present a complete, updated version of that program. It is left to you to modify DisplayHome, NewTown, and ChangeTown to suit our new Home. To encourage you to undertake this challenging exercise, and to celebrate the second anniversary of the Pascal Path, *Softalk* is offering prizes for the best versions of "SuperCable," submitted by readers. Here are the rules for the competition:

1. Submit all entries to Softalk SuperCable, Box 60, North Hollywood, CA 91603. All entries must be received at the offices of *Softalk* on or before March 15, 1983. The winners' names will be announced in the June 1983 issue of *Softalk*.

2. Prizes will be awarded in two divisions: beginner (less than one year of formal training and no commercial experience) and advanced/professional (more than one year of formal training or any commercial programming experience). The winner in each division will receive \$50 worth of merchandise from the retailer of their choice.

3. All entries must be submitted in source form as text files on Apple II Pascal format disks. Each disk submitted must bear the name, address, and phone number of the author on the label only. If the source program or disk directory identifies the entrant in any way, he or she will be disqualified. The label must also clearly indicate the division (beginner or advanced/professional) in which the entry is to be classed. Any entries without such indication will be judged by the stricter standards of the advanced/professional division.

4. No set of entry disks will be returned unless it is accompanied by a self-addressed disk mailer type envelope and stamped with sufficient postage for the class of mail marked on the

envelope. All sets of disks returned will include source files for the first-place program from the advanced/professional division. Anyone who wishes to receive this program without entering the competition must still submit a blank Pascal-formatted disk, along with a stamped, self-addressed return disk mailer type envelope.

5. All disks submitted under the terms of this competition must be free of defects. Unreadable or damaged disks will be discarded; the entries associated with them will be disqualified. Therefore, pack your disks carefully!

6. If more than one entry is received from any individual before the deadline, only the entry postmarked *last* will be judged.

7. Any entry that contains a copyright notice will be disqualified. All other program submissions will enter the public domain.

Completing the *SuperCable* program will test both your command of the Pascal system and language and your understanding of the software development principles we've studied so far. It won't be easy, but it should be fun. You have nothing to lose by entering the contest, and a lot of good experience to gain (not to mention some great prizes), so get cracking, and good luck!

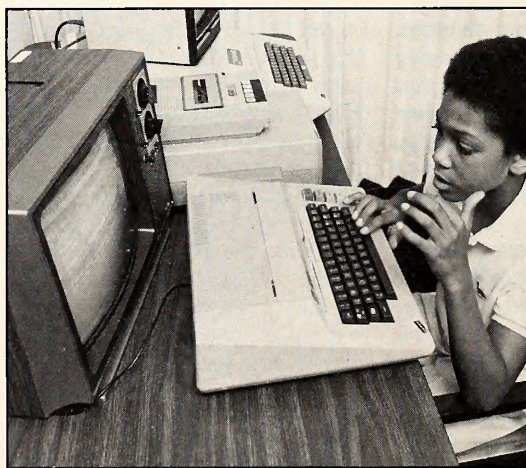
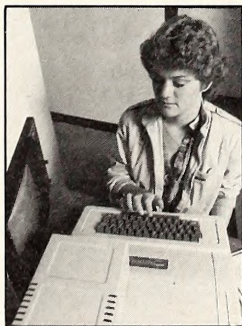
Coming: A Tour through the Hall of Mirrors. Most mail addressed to this column requests coverage of one or both of two tough topics: *recursion* and the meaning and use of *compiler directives* (specifically, the "U—" compilation mode). If you've followed the Pascal Path to this point, then you are certainly ready to explore both of these subjects, although you are hereby warned that the going is apt to be rough, even for the expert programmer!

Anyone who has ever arranged two mirrors so that each reflects the image of the other will certainly remember the "endless corridor" of mirror images thus created in both reflective surfaces. The first mirror contains an image of the second, which contains a smaller image of the first, which contains an even smaller image of the second, and so on, until the corridor thus created fades into the green depths of the glass. This commonplace, yet fascinating, phenomenon is an example of recursion: the technique of defining an object or method in terms of itself (or several objects in terms of each other). At first glance, you might be confused by—or at least question the usefulness of—the seemingly circular reasoning that underlies recursion. With practice, however, you'll soon be comfortable with this very powerful method of cutting many a knotty problem down to size. And, next month, you'll get plenty of practice!

Thanks to several friendly "Kiwi" Apple dealers and distributors whose hospitality made possible the preparation of this column: Robert Pitchforth, David Hanson, and Ian Laming of Data Link in Wellington; John Bowman of ComputerSouth in Christchurch; and David Blair and Peter Davey of C.E.D. Distributors in Auckland. Kiwis and Aussies of all ages and occupations who use Apple Pascal in their work or studies are invited to correspond with Jim Merritt, in care of Softalk.



Why does EDU-WARE bother to meet individual needs?



Have you ever met an "average" learner? The reality is that every learner brings to the curriculum at hand a distinct combination of skills—at any age, in home or classroom. Given the reality, solutions to learning needs must somehow focus on the individual.

Edu-Ware focuses on the needs of the individual learner. Use its Computer Based Instruction (CBI) to achieve specific learning objectives:

Accelerate — Gifted students need opportunities to advance beyond their classmates. Edu-Ware helps them follow their own pace and ensures continuing motivation.

Remediate — Deficiencies in core skills sometimes limit a learner's success in an entire subject. Edu-Ware can be fine-tuned to the

individual's abilities in distinct skill areas; give the right feedback at the right time; alleviate frustration.

Reinforce — Learners sometimes run into hurdles in their work which they need help to bridge. For them Edu-Ware's benefits are 1) precise definition of skills taught in each system and 2) a patient, non-threatening approach.

Refresh — At one time or another, nearly everyone wants to brush up on skills. Edu-Ware offers adults and young learners alike an effective way to review.

Edu-Ware helps solve learning needs each step of the way . . . because some learners require a helping (animated) hand or carefully monitored instruction, while others are prepared to manage their own learning.

For young learners, **ARITHMETIC SKILLS™** uses high resolution displays and minimum text to establish basic math skills — addition, subtraction, multiplication, and division.

EDU-WARE. Because solution means more than "keeping them busy."

The Learning Manager Systems in **FRACTIONS** and **DECIMALS** let specific parameters (i.e. number or subject of test problems, sequence, sound effects) be tailored to the individual.

The **ALGEBRA SERIES**, a sequence of five independent packages, together comprise a first-year algebra course. Its learners have already acquired basic math skills. Selecting to work in one or more "learning styles," each individual is encouraged to achieve an increased level of self-management.

Edu-Ware can make the difference in Language Arts. Often that difference means adaptability to a wide range of learners.

Teachers participating in an MECC evaluation of COMPU-READ reported: "Students liked the programs . . . they really had to concentrate. It was surprising how even the youngest children stayed on task."* **COMPU-READ** is a tool for improving reading speed and recall because it works with the reader (child through adult), matching pace to performance.

COMPU-SPELL teaches spelling by positive reinforcement. With Data Levels 4-8 it will accommodate up to sixty learners, yet gives each individual vocabulary suited to his or her needs. **COMPU-SPELL** with the

Adult/Secretarial level becomes a tool for mastering words common in business, industry, and college.

Edu-Ware helps you to prepare, whether for the college board or the business world.

Word attack skills are tools of analysis which give you an edge on mastering vocabulary, deciphering new or unfamiliar words, and taking tests. **SAT and PSAT** WORD ATTACK SKILLS** are tutorials which give college-bound students that edge.

New tools called **Interactive Simulations™** — Demonstration aids learning, especially in subjects like Earth Science and Physics.

RENDEZVOUS accurately simulates, in 3-D animation, the orbital flight of a space shuttle craft. It will demonstrate exact systems of ballistics and orbital mechanics or the disorienting effects of inertial space. Use it to test the limits of learners' (over 13) physics understanding, mathematical judgment, and perceptual skill.

Learning companions for the very young. Children 3-6 are taking their first steps toward "computer literacy." With animation and easy-to-read, high resolution graphics, Edu-Ware's "BEEs" make learning comfortable and

fun without forfeiting carefully managed instruction.

Children work intently with **SPELLING BEE AND READING PRIMER**, discovering basic concepts about words, spelling, and reading. Capturing attention, **COUNTING BEE** introduces young learners to numbers.

Walk into your local computer dealership and

ask for a demonstration of Edu-Ware. You'll see the difference.

Edu-Ware Services, Inc.
P.O. Box 22222
Agoura, CA 91301
213/706-0661

*From a review in the "Instructional Computing Newsletter"; MECC, May 1982.

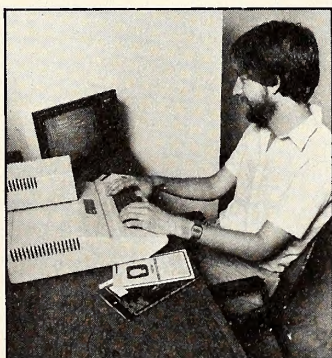
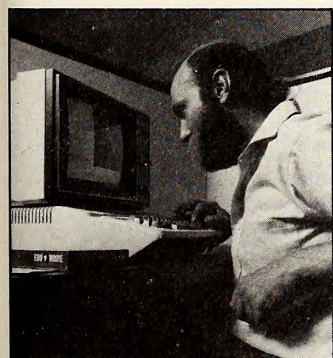
**Edu-Ware has no affiliation with the College Entrance Examination Board or the Educational Testing Service.

	Apple II/II Plus 48K DOS 3.3	Atari 800 48K Disk	Atari 800 32K Cassette
Arithmetic Skills	\$49.95*	—	—
Edu-Ware Fractions	\$49.00	\$39.95	\$29.95
Edu-Ware Decimals	\$49.00	\$39.95	\$29.95
Algebra 1, Algebra 2, or Algebra 3	\$39.95 each	—	—
Compu-Spell System	\$29.95*	—	—
separate Data Diskettes	\$19.95 each		
Compu-Read 3.0	\$29.95*	\$29.95	\$19.95
PSAT Word Attack Skills; SAT Word Attack Skills	\$49.00 each	—	—
Rendezvous	\$39.95	—	—
Counting Bee	\$29.95*	—	—
Spelling Bee and Reading Primer	\$39.95	—	—

* Also DOS 3.2 compatible.
Edu-Ware is a registered trademark of Edu-Ware Services, Inc.

Apple is a trademark of Apple Computer Inc.

Atari is a trademark of Atari Computers Inc.



It means LEARNING.

EDUWARE®
The Science of Learning™

THE ANIMATED APPLE

With GraForth

Part 6

BY PAUL LUTUS AND PHIL THOMPSON

As a graphics language, GraForth's usual emphasis lies in creating fast hi-res animations. One feature that is frequently overlooked is GraForth's ability to produce music using a built-in synthesizer. In this column we'll explore GraForth's sound capabilities, with examples of sound effects and a song-generating program.

The music synthesizer is controlled by two GraForth words, *note* and *voice*. Note actually plays the notes and voice determines the tone quality of the notes played.

Note removes two numbers from the stack, for pitch and duration. Greater pitch numbers produce lower notes, and greater duration values increase the time the note plays. Both pitch and duration numbers can range from 2 to 255. For example,

```
255 255 NOTE
```

plays a low note with a long duration.

```
50 2 NOTE
```

plays a very short, medium-pitched note. In fact, the note is almost too short to be recognized as more than a click. However, curious effects can be obtained by repeating short notes:

```
25 0 DO 50 2 NOTE LOOP
```

By experimenting and choosing appropriate values, you can play music. The following word definition plays the first phrase from "Twinkle Twinkle Little Star."

```
: TWINKLE
104 100 NOTE
```

```
104 100 NOTE
69 100 NOTE
69 100 NOTE
62 100 NOTE
62 100 NOTE
69 150 NOTE ;
```

Notes played using the note command can be given any one of a number of tone qualities, or voices, with the GraForth command *voice*. Voice removes a number from the stack to select the tone quality that will be used for subsequent note commands. Valid voice numbers range from -6 to 2.

Values from -6 to -1 for voice produce notes with constant volume. Each voice has a different volume and tone quality. The loudest note with the flattest sound is produced by -1 voice. (Voice values less than -2 sometimes produce inconsistent volumes for notes of different pitches and are more suitable for sound effects than music.)

The values 0 through 2 produce notes with varying volumes. A note played with 0 voice begins loudly, then dies away. The value 1 causes a note to increase in volume, then decrease again. A note with an increasing volume can be generated with 2 voice.

When GraForth first starts up, 0 voice is set automatically. You might want to try the *Twinkle* routine after setting various voices:

```
-1 VOICE TWINKLE
-3 VOICE TWINKLE
2 VOICE TWINKLE
```

On page 9-4 of the GraForth manual is a table of musical notes and their corresponding pitch numbers. This table was used to determine the pitch numbers for the above *Twinkle* example. Note that the numbers 104, 69, and 62 refer to the notes C, G, and A respectively.

For short musical phrases, manually looking each pitch up in a table





```
2816 VARIABLE FILE
VARIABLE POINT
VARIABLE COUNT
VARIABLE DISK
VARIABLE OCTAVE
VARIABLE PITCH
VARIABLE DURATION
VARIABLE AT.END
VARIABLE GOT.ERROR
```

```
50 STRING PITCHES
50 STRING NAMES
```

```
: SET.UP
24870
48 0 DO
    DUP 100 / I PITCHES POKE
    DUP 18 / -
    DUP 1655 / -
LOOP DROP
0 NAMES ASSIGN " A A#B C C#D D#E F F#G G#A B/B C D/D E/E F
G/G A/ " ;
```

```
: GETPITCH
PITCHES PEEK ;
```

```
: CTRL-C?
131 = IF ABORT THEN ;
```

```
: PUT.END
CLOSE
0 POINT POKEW
1 -> AT.END ;
```

```
: ERROR
AT.END 0 = IF
1 -> GOT.ERROR
PUT.END
CR PRINT " ERROR - LINE "
COUNT . CR
```

```
PAD WRITELN CR
THEN ;
```

```
: BEFORE
0 -> AT.END 0 -> COUNT
0 -> GOT.ERROR
HOME NORMAL DECIMAL CR
PRINT " GRAFORTH SONG COMPILER "
CR CR
PRINT " ENTER SONG FILE ADDRESS : " FILE .
26 HTAB PAD READLN PAD PEEK CTRL-C?
PAD GETNUM
VALID IF -> FILE ELSE DROP THEN
3 VTAB 26 HTAB FILE . CLEOL CR
CR PRINT " [K]EYBOARD OR [D]ISK? "
GETC DUP CTRL-C? DUP PUTC CR CR
196 = IF
1 -> DISK
CR PRINT " FILENAME : "
PAD READLN PAD PEEK CTRL-C?
CR 132 PUTC PRINT " OPEN "
PAD WRITELN
CR 132 PUTC PRINT " READ "
PAD WRITELN CR
ELSE 0 -> DISK
THEN
FILE -> POINT ;
```

```
: SKIP.SPACES
BEGIN
    DUP PEEK 160 =
WHILE
    1 +
REPEAT ;

: PUT.REST
1 + SKIP.SPACES GETNUM
VALID IF
    DUP DUP 1 > SWAP 256 < AND IF
    0 POINT POKE
```

is satisfactory. For longer tunes, however, this can quickly become tedious. The *Compute.Notes* example in the manual solves this problem by creating a pitch table in the Apple's memory. The table has forty-eight entries spanning four octaves. By indexing into the table, the notes can now be represented with the numbers 0 through 47.

The examples on page 9-5 in the manual are inconsistent. Note that the definition of *Getpitch* and the first example have *Getpitch* print the pitch value on the screen. Subsequent examples do not print the value but leave it on the stack to be used by the note command. The definition and the first example should be changed to agree with the other examples. Here is the correct definition for *Getpitch*:

```
: GETPITCH PITCH PEEK ;
```

Pitch and *Compute.Notes* must have already been compiled and *Compute.Notes* must have been executed for these examples to work. *Getpitch* can be used to convert a note number into a pitch value to be used by the note routine. This example (correcting the example in the manual) prints the pitch value for note number 3, which is a C in the first octave:

```
3 GETPITCH .
209
```

Here the pitch value is actually used to play the note:

```
3 GETPITCH 128 NOTE
```

The following word definition is equivalent to the *Twinkle* routine, except that *Getpitch* is used to retrieve the pitch value for each note. The actual note names are included in the comments:

```
: TWINKLE2
15 GETPITCH 100 NOTE ( C, octave 2 )
15 GETPITCH 100 NOTE
```

```
22 GETPITCH 100 NOTE ( G, octave 2 )
22 GETPITCH 100 NOTE
24 GETPITCH 100 NOTE ( A, octave 3 )
24 GETPITCH 100 NOTE
22 GETPITCH 150 NOTE ; ( G, octave 2 )
```

The note command is designed for playing notes, but it has no built-in capacity for playing rests of a similar duration. The following word, *rest*, removes a duration number from the stack and simply waits for this amount of time. The durations used are nearly identical to those used by note:

```
: REST
45 * 0 DO LOOP ;
```

This example will play two quarter notes of C in the first octave, separated by a quarter note rest:

```
3 GETPITCH 64 NOTE 64 REST 3 GETPITCH 64 NOTE
```

Music Playing Programs. As you can guess by the *Twinkle2* example, playing entire songs by entering a long string of note commands can take a lot of time and use a lot of memory. A program that allows you to enter songs in a more convenient form, optionally save them to disk, and play them at any time would be much more efficient. The easiest way to enter notes would be to type in the note names as text. This text must then be converted into numeric pitch and duration values for the note command.

The programs in listings 1 and 2 use a two-step approach to generating and playing music. Using the first program, *Compile.Song*, you can enter note names and durations from the keyboard, or you can have the program read the commands from a text file on disk. *Compile.Song* converts these lines into a list of note numbers in memory. This song list can be saved back to disk as a binary file. The second program, *Play.Song*, reads the values from the list and calls note repeatedly to play each note


```

POINT 1 + POKE
ELSE DROP ERROR
THEN
ELSE DROP ERROR
THEN ;

: PUT.VOICE
1 + SKIP.SPACES GETNUM
VALID IF
    DUP DUP -7 > SWAP 3 < AND IF
        7 + POINT POKE
        0 POINT 1 + POKE
    ELSE DROP ERROR
    THEN
ELSE DROP ERROR
THEN ;

: PUT.NOTE
DUP GETNUM - > OCTAVE
VALID 0 = IF ERROR THEN
OCTAVE DUP 1 < SWAP 4 > OR IF ERROR THEN
1 + SKIP.SPACES DUP PEEKW
PUSH 0
BEGIN
    DUP DUP NAMES PEEKW 1 <>
    SWAP 48 < AND
WHILE
    2 +
REPEAT
POP
DUP 48 = IF ERROR THEN
DUP 24 > = IF 24 - THEN
2 / DUP 0 < IF ERROR THEN
OCTAVE 1 - 12 * +
GETPITCH - > PITCH
2 + SKIP.SPACES GETNUM - > DURATION
VALID 0 = IF ERROR THEN
DURATION DUP 2 < SWAP 255 > OR IF ERROR THEN
PITCH POINT POKE
DURATION POINT 1 + POKE ;

```

```

: DURING
BEGIN
    COUNT 1 + - > COUNT
    DISK 0 = IF
        PRINT " MUSIC COMMAND (E=END) : "
        THEN
        PAD READLN
        PAD PEEK CTRL-C?
        PAD SKIP.SPACES
        DUP PEEK 210 = IF PUT.REST
        ELSE DUP PEEK 214 = IF PUT.VOICE
        ELSE DUP PEEK 197 = IF PUT.END
        ELSE PUT.NOTE
        THEN THEN THEN
        POINT 2 + - > POINT
        AT.END
UNTIL ;

: AFTER
CR COUNT . PRINT " LINES, "
POINT FILE - . PRINT " BYTES "
CR CR PRINT " SAVE TO DISK (Y/N) ? "
GETC DUP PUTC 217 = IF
    CR CR PRINT " FILENAME : "
    PAD READLN PAD PEEK CTRL-C?
    CR 132 PUTC PRINT " BSAVE "
    PAD WRITELN
    PRINT " ,A " FILE .
    PRINT " ,L " POINT FILE - . CR
THEN
CR CR ;

: COMPILE.SONG
SET.UP
BEFORE DURING
GOT.ERROR 0 = IF
    AFTER
THEN ;

```

Listing 1. Compile.Song.

INVENTORY MANAGERS:

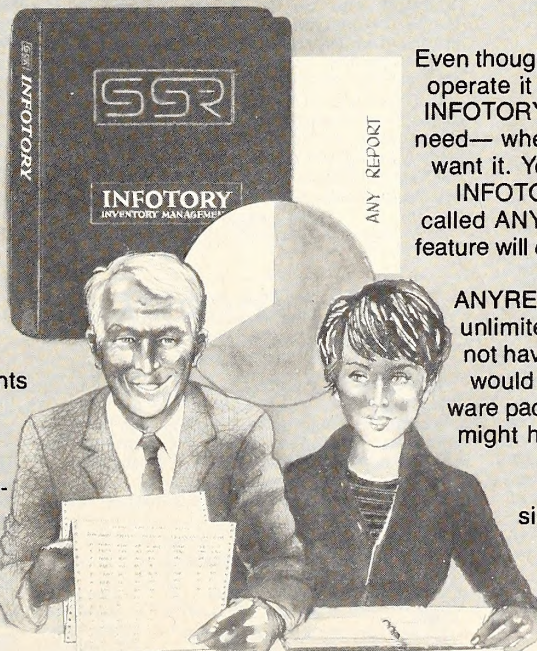
WHEN YOU BUY INFOTORY™... YOU'RE BUYING THE BEST!

SSR Corporation has been providing business solutions for all makes and sizes of computers for over twelve years. They know your needs and how to satisfy them.

They know what management wants in an inventory system...less time learning and more time producing.

Last year SSR introduced INFO-TORY...the ultimate solution to inventory management problems.

With INFOTORY *anyone* in the office can learn the system—in less than four hours...because it's so easy to use.



Even though the system is easy to learn and operate it has great flexibility and power. INFOTORY promises the information you need—when you need it *and* the way you want it. You design your own report with INFOTORY'S unique reporting feature called ANYREPORT™. This easy to learn feature will deliver customized reports within minutes.

ANYREPORT's capabilities are almost unlimited. Other inventory systems do not have an ANYREPORT feature. You would have to buy an additional software package to get this extra...and you might have to take a computer course to learn how to use it.

So, for the best, most flexible, simple-to-learn inventory package available...stop in at your nearest Apple Dealer, or give SSR a call for more information.

NEW Unlocked Apple Utility Disks

Don't Blow Your Bucks on Locked-Up Uncopyable Apple Software.

NEW!

Frame-Up

HI-SPEED GRAPHICS DISPLAY
BY TOM WEISHAAR

CREATE PROFESSIONAL PRESENTATIONS of intermixed hi-res, lo-res and text frames. Easy-to-use and FAST—hi-res images load in 2½-seconds! Paddles or Keyboard-advance frames in forward or reverse.

UNATTENDED SHOWS are possible with each frame individually pre-programmed to appear on the screen from 1 to 99 seconds.

TEXT SCREEN EDITOR lets you create your own b/w text "slides". Add type "live" from the keyboard during presentations if you want.

DISPLAY MODULE: Send entire presentations-on-disk to your friends and associates.

FRAME-UP: \$29.50

(Includes Peeks/Pokes Chart)

Apple Mechanic

SHAPE-WRITER/BYTE-ZAP DISK
BY BERT KERSEY

SHAPE EDITOR: Keyboard-draw shapes for hi-res animation in your programs. Design proportionally-spaced typefaces with special characters. 6 fonts on the disk. Listable demos show how to use shape tables to animate games, graphics and professional Charts & Graphs.

BYTE-ZAP: Rewrite any byte on a disk for repair or alteration. Load entire sectors on the screen for inspection. Hex/Dec/Ascii displays and input. Complete instructions for making trick file names, restoring deleted files, etc.

MORE: Useful music, text and hi-res tricks for your programs. Educational documentation.

APPLE MECHANIC: \$29.50

(Includes Peeks/Pokes Chart & Tip Book #5)

NEW!

Typefaces

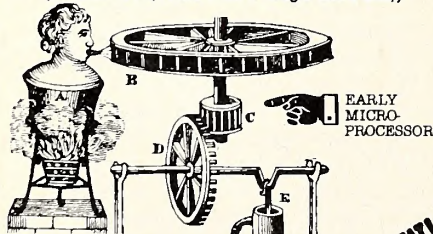
FOR APPLE MECHANIC

26 NEW FONTS for Apple Mechanic's Xtyper and Hi-Writer programs. Most are full 96-character fonts, large & small, of fully-editable characters. (Apple Mechanic required)

BEAGLE MENU: Use with your disks. Display only the filenames you want (e.g. only Applesoft files or only Locked files) for one-key cursor selection/execution. Space-on-disk, catalog scan, optional sector-number elimination.

TYPEFACES for Apple Mechanic: \$20.00

(Includes Peeks/Pokes Chart & Beagle Menu Utility)



Beagle Bag NEW!

12-GAMES-PLUS ON ONE DISK
BY BERT KERSEY

TWELVE GREAT GAMES from the classic Beagle Bros collection—TextTrain, Slippery Digits, Wowzo, Magic Pack, Buzzword... Almost all of our "Game Pack" games, updated and re-released on one jam-packed, entertaining unprotected disk.

COMPARE BEAGLE BAG with any one-game locked-up game disk on the market today. All 12 games are a blast, the price is right, the instructions are crystal clear, AND the disk is copyable. You can even change the programs or list them to LEARN, and see what makes them tick.

BEAGLE MENU TOO: See "Typefaces" above.

BEAGLE BAG: \$29.50

(Includes Peeks/Pokes Chart & Beagle Menu Utility)

NEW!

Flex Text

70-COLUMN TEXT UTILITY
BY MARK SIMONSEN

PRINT VARIABLE-WIDTH TEXT on the hi-res screens with normal Applesoft commands (including Htab 1-70). Normal, expanded & compressed text on same screen—no hardware!

ADD GRAPHICS TO TEXT or vice-versa. Run existing programs under Flex Text control. Easy to use and compatible with PLE® and GPLE.®

DOS TOOL KIT® FONT compatibility, or use Flex Text fonts. Select up to 9 fonts with ctrl-key commands. Print/List/Catalog in any style! Custom TEXT CHARACTER EDITOR included.

FLEX TEXT: \$29.50

(Includes Peeks/Pokes Chart, requires monitor)

Utility City

21 UTILITIES ON ONE DISK
BY BERT KERSEY

LIST FORMATTER prints each program statement on a new line. Loops indented with printer page breaks. A great de-bugger! Also...

MULTI-COLUMN catalogs for printouts, autopost Run-number & Date in programs, put invisible commands in programs, create INVISIBLE file names, alphabetize/store info on disk, convert decimal to hex or INT to FP, renumber to 65535, append programs, dump text-screen to printer...

MORE TOO: 21 Programs Total, a best-seller!

UTILITY CITY: \$29.50

(Includes Peeks/Pokes Chart & Tip Book #3)



10 FOR A = 1 TO 22: PRINT CHR\$(ASC (MID\$(
"IJ—IIPX(TIZPVSIJTUFS@", A, 1))—A/A);
20 FOR B = 1 TO 4: C = PEEK(49200): NEXT B, A

DOS Boss

DISK COMMAND EDITOR
BY BERT KERSEY & JACK CASSIDY

RENAME COMMANDS & ERROR MESSAGES: "Catalog" can be "C"; "Syntax Error" can be "Oops" or anything you want. Protect your programs; unauthorized save-attempt can produce "Not Copyable" message. Also LIST-prevention and one-key program-run from catalog.

CUSTOMIZE DOS: Change Disk Volume heading to your message. Omit/alter catalog file codes. Fascinating documentation and tips; hours of juicy reading and Apple experiments.

ANYONE USING YOUR DISKS (booted or not) will be formatting DOS the way you designed it.

DOS BOSS: \$24.00

(Includes Peeks/Pokes Chart & Tip Book #2)

Tip Disk #1

100 TIP BOOK TIPS ON DISK
BY BERT KERSEY

100 LISTABLE PROGRAMS from Beagle Bros Tip Books 1-4. Make your Apple do things its never done! All programs changeable for experimentation. Includes our Apple Command Chart: ALL Applesoft, Integer & DOS Commands!

TIP DISK #1: \$20.00

(Includes Peeks/Pokes and Apple Command Charts)



SINCE I GOT MY
BEAGLE BROS COMMAND
CHART, I'VE ACQUIRED
NEW VIM AND VIGOR!

(an unsolicited endorsement)

"APPLE" is a
registered
trade mark of
You-Know-Who.

GOTO your
Apple Dealer for
Beagle Bros
disks.

NEW!

ProntoDOS

HIGH-SPEED DISK UTILITY
BY TOM WEISHAAR

HIGH-SPEED DOS! Take a look—

Function	Normal	Pronto
BLOAD HI-RES IMAGE	10 sec.	3 sec.
BSAVE HI-RES IMAGE	12 sec.	6 sec.
LOAD 60-SECTOR PROGRAM	16 sec.	4 sec.
SAVE 60-SECTOR PROGRAM	24 sec.	9 sec.
BLOAD LANGUAGE CARD	13 sec.	4 sec.
TEXT FILES	(no change)	

BOOT PRONTO-DOS or any updated normal-3.3 disk. Create new ProntoDos disks with the normal INIT command. ProntoDos is compatible with ALL DOS COMMANDS and performs normally with almost ALL programs, including CopyA.

MORE DISK SPACE: ProntoDos frees-up 15-extra-sectors per disk, almost one full track!

PRONTO-DOS: \$29.50

(Includes Peeks/Pokes Chart)

Alpha Plot

HI-RES GRAPHICS/TEXT UTILITY
BY BERT KERSEY & JACK CASSIDY

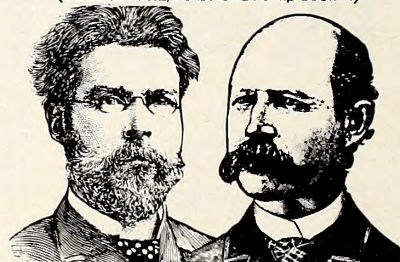
DRAW IN HI-RES, on 2 pages, using keyboard or paddles/joystick. See lines before plotting. Mixed-colors and reverse (background opposite). Fast circles, boxes and ellipses; filled or outlined.

COMPRESS HI-RES PIX to 1/3 Disk-Space. Superimpose pages or re-locate any rectangular image area anywhere on either hi-res page.

HI-RES TEXT: Proportional spacing, adjustable character size and color, upper/lower case, no tab limits, sideways typing for graphs.

ALPHA PLOT: \$39.50

(Includes Peeks/Pokes Chart & Tip Book #4)



Beagle Bros
Micro Software Inc.

Where to Buy Beagle Bros Disks:

MOST APPLE DEALERS carry Beagle Bros software. If yours doesn't, get on his case. Or order directly from us for IMMEDIATE SHIPMENT—

Visa/MasterCard/COD, call TOLL FREE:

Nationwide: 1-800-854-2003 ext. 827

California: 1-800-522-1500 ext. 827

Alaska/Hawaii: 1-800-854-2622 ext. 827

OR mail U.S. check, money-order or Visa/MC #s

to BEAGLE BROS, Dept. S

4315 SIERRA VISTA / SAN DIEGO, CA 92103

Please add \$1.50 First Class shipping, any size order. Overseas add \$4.00. COD add \$3.00. California add 6% ALL ORDERS SHIPPED IMMEDIATELY.

in turn. In addition to playing notes, *Compile.Song* and *Play.Song* also allow you to play rests and change voices during the song.

The two-step technique used by these programs is similar to the method used by the *Profile* program for creating 3-D graphics. *Profile* converts a set of X,Y points in a text format into a list of 3-D image values in memory. This image is then used by GraForth's 3-D routines to draw a 3-D object. This similarity should help clarify the way these music programs work.

Using the GraForth text editor (or another DOS-compatible text editor, if you have one), enter the program in listing 1 into memory and save it to disk with the name *Compile.Song*.

The *Compile.Song* file is somewhat long. If you are using the GraForth text editor without a language card or RAM card, you will need to adjust the editor *program position* to allot enough memory for the file. Enter the editor, type P to select program position, type Y, and then enter a new position of 34000. This will provide enough room for the *Compile.Song* file.

After *Compile.Song* is saved to disk, enter the program in listing 2, saving it as *Play.Song*.

Here are instructions for using these programs:

To create a new song file, first load *Compile.Song* into memory and run it:

```
READ " COMPILE.SONG "
RUN
```

On the screen will appear:

```
GraForth Song Compiler
Enter Song File Address : 2816
```

This question determines where the numeric song list will appear in memory. Press return to accept the address of 2816, or enter a new address. Next you will see:

[K]eyboard or [D]isk?

You can enter the formatted music lines from the keyboard or have

the program read the lines from a text file on disk. For this example, press K for keyboard entry.

Now you are asked to enter a music command:

Music Command (E=end) :

VARIABLE END

```
: SET.END
1 - > END
DROP DROP ;

: REST
45 * 0 DO LOOP
DROP ;

: SET.VOICE
DROP
7 - VOICE ;

: PLAY.SONG
0 - > END
BEGIN
  GETKEY 128 <
  IF
    DUP PEEK
    OVER 1 + PEEK
    OVER SGN 2 * OVER SGN +
    CASE:
      SET.END
      REST
      SET.VOICE
      NOTE
    THEN
      2 +
  ELSE SET.END
  THEN
    END
  UNTIL
  DROP ;
```

Listing 2. *Play.Song*.

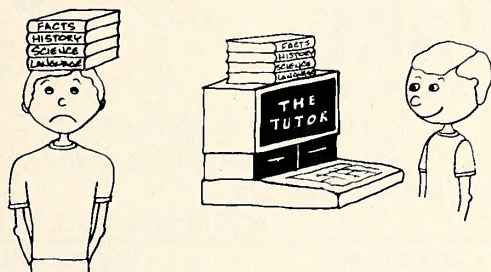
PARENTS !

TEACHERS !

STUDENTS !

THE TUTOR

CAN HELP LEARNING BE LESS OF A BURDEN !



LET "THE TUTOR" HELP IMPROVE STUDENT GRADES !

THE TUTOR

APPLE II or
APPLE II Plus (*)
48K
DOS 3.3

COST IS ONLY \$39.95

Send check or money order to:

EVERGREEN DATA SYSTEMS, INC.
P.O. Box 98
Evergreen, CO 80439

(*) Apple II and Apple II Plus
are trademarks of
Apple Computing Company.

Colorado residents add
4% Sales Tax (\$1.59)

What does it do?

THE TUTOR provides the student with a study tool that he can tailor to his own study needs or that dictated by his teacher or course material.

How does it do this?

THE TUTOR guides the student in creating a quiz of questions and answers from his subject/course material which is then saved on a disk. The student can then run the quiz as often as he wants to study the material and be graded on his progress in learning the material.

What computer do I need?

Apple II or Apple II Plus (*), 48K, with at least 1 disk drive (DOS 3.3).

What do I need to know?

You only need to know how to turn on your Apple, put a disk in your disk drive, and be able to initialize an unused disk. THE TUTOR will instruct

you each step of the way in creating your quizzes, how to run them, and how to make changes to them.

Why is this a good study tool?

- THE TUTOR never gets angry at you if you do not answer your questions correctly. It simply tells you what the correct answers are.
- THE TUTOR gives positive reinforcement when you answer questions correctly, and gives you a running percentage of correct responses.
- THE TUTOR can ask you questions in the sequential order in which the questions were first created, or it can scramble the questions in random order to make sure you haven't just learned a pattern of responses.
- THE TUTOR also allows you to review just the questions you miss until you can achieve 100% correct responses.

What kind of limits will I encounter?

- THE TUTOR will create any number of quizzes, however, each quiz is limited to 50 questions.

- Each question within a quiz is limited to 10 lines.
- There may be from 1 to 5 valid answers for each question (one line per answer).
- There may be up to 10 lines of an information paragraph, or answer table, which could appear with your questions and answers.

What forms can the questions take?

The form the questions take is limited only by your imagination. THE TUTOR provides 2 very flexible vehicles with which to build your quizzes:

1. Simple questions and answers which include direct questions and answers, multiple choice questions, and fill in the blanks.
2. A series of questions that are related to an answer table, information paragraph, or matching test table. Up to 10 lines of information (or possible answers) can appear on the upper half of the screen, while a series of related questions appear on the lower half of the screen.

You can enter commands to play a note or rest, change voices, or end the song. Here is the format for a note command:

1. optional spaces
2. octave number
3. optional spaces
4. note name
5. at least one space
6. duration value

The octave number corresponds to the octave numbers in the table on page 9-4, ranging from 1 to 4. The note name is a letter from A to G. You can also add # to the letter for a sharp, or / for a flat. The duration value is simply the number used by note for duration. Here are some sample note commands you can enter. Notice how each command follows the above format. Entering these example entries will produce the "Shave and a Haircut" tune.

Music Command (E=end) : 2C 120
 Music Command (E=end) : 1G 40
 Music Command (E=end) : 1F# 40
 Music Command (E=end) : 1G 40
 Music Command (E=end) : 1A/ 120
 Music Command (E=end) : 1G 120

Rests are entered by typing an R followed by a space and the desired rest value. Here is the next entry as an example:

Music Command (E=end) : R 120

The voice used can be changed by typing a V and the new voice number (no space is necessary). Here is the example entry:

Music Command (E=end) : V-1

The tune is finished with the following entries:

Music Command (E=end) : 2B 60
 Music Command (E=end) : R 60
 Music Command (E=end) : 2C 60

The command to end the song (as you might have guessed from the prompt) is the letter E. This is required as the last entry of the song.

Music Command (E=end) : E

The program will inform you that you entered twelve lines, which have been converted into a number list twenty-four bytes long. You will then be asked if you want to save the list to disk. For this example, press Y. You will be prompted for a file name. Type *shave* and press return. This disk will whir as the list is saved as a binary file named *Shave*, and the program will end.

Compile.Song can also read music commands from a text file on disk. To compile songs using this method, first use the GraForth text editor to create a list of music commands, then save them as a text file. When running *Compile.Song*, select the disk option (D), and then enter the file name of the text file. The program will read the commands from the file and compile them as if they were entered at the keyboard. The advantage to this technique is that a music text file can be modified or corrected using the text editor and then recompiled into a numeric song list. Keyboard entries must be reentered every time.

The program also includes error checking. If it can't interpret a line as a valid music command, or if a number is out of range, an error message will be printed. This message includes the line number where the error occurred and a display of the illegal line. The program stops compiling lines when it finds an error. The program will also exit if you press control-C or control-C and return for an input.

Assuming no errors occurred, a sample song list is now in memory, beginning at location 2816, and also on disk. To play the song, first load *Play.Song* into memory:

READ " PLAY.SONG "

Place the starting location of the song list (2816) on the stack, then execute *Play.Song*:

2816 PLAY.SONG

apple
software

CALSOFT

Personal – Entertainment – Business

SOFTWARE

• Fast Service & Low Prices •

• Large Selection of Software

• Fast Convenient Service

• Call or Write for Free Catalog

• We ship same or next day

We have All the latest software - Ask Us!

Call Toll Free (800) 423-5290

In California (213) 991-9641



BRODERBUND

Arcade Machine
 Choplifter
 David's Midnight Magic
 Deadly Secrets
 Labyrinth
 Sea Fox
 Star Blazer
 Serpentine

CONTINENTAL

Home Accountant
 First-Class Mail
 CPA Modules #1-5

ADVENTURE INTERNATIONAL AUTOMATED SIMULATIONS

ASHTON-TATE
 AVANT-GARDE
 BEAGLE
 DATAMOST
 DATASOFT
 DON'T ASK
 EDU-WARE

SIRIUS

Bandits
 Escape from Rungistan
 Joyport
 Way Out
 Blade of Blackpoole

SOFTWARE PUBLISHING

PFS Series

PENGUIN

Complete Graphics System
 Graphics Magician
 Special Effects

GEBELLI

HAYES
 INSOFT
 KENSINGTON
 LEARNING CO.
 MICROPRO

STRATEGIC

Road to Gettysburg
 Cosmic Balance
 Guadalcanal Campaign
 Battle for Normandy
 Germany: 1985

STONEWARE

DB Master

INFOCOM

Zork I, II, III
 Deadline
 Starcross

MICROSOFT

MUSE
 PEACHTREE
 QUALITY
 SENSIBLE
 SENTIENT

SIERRA ON-LINE

Cross Fire
 Dark Crystal
 Frogger
 Lisa 2.5
 General Manager
 Screenwriter II
 Ultima II
 Pest Patrol

HOWARD

Tax Preparer (1983)
 Creative Financing
 Real Estate Analyzer

SIR-TECH
 SOUTHWESTERN
 SPINNAKER
 SUBLOGIC
 SYNERGISTIC
 SYSTEMS PLUS
 TG PRODUCTS
 VIDEX
 VISICORP

Check
 G.O.D.
 Visa
 Mastercharge

CALSOFT

346 N. Kanan Rd., #103
 Agoura, CA 91301

The "Shave and a Haircut" tune should play. Whenever a song is playing, pressing any key will immediately stop the song.

With the song list saved to disk, the song can be loaded into memory and played at any time. Simply load the song list into a free area of memory, read *Play.Song* onto the word library, and call it with the starting address of the song on the stack.

A list of *Compile.Song* music commands for the final part of "Stars and Stripes Forever" can be found in listing 3. This provides an example of a longer song generated with these music programs.

Song List Format. In last month's column we described the format for three-dimensional images in memory. In the interest of equal time, we'll discuss the song list format here.

Each note entry in the list is stored as a pair of bytes in memory. The *Play.Song* program reads each byte pair in turn and determines whether each byte is zero or nonzero. The function performed (note, rest, voice, or end) is determined by this test as follows:

1st byte	2nd byte	Function
nonzero	nonzero	Note
zero	nonzero	Rest
nonzero	zero	Voice
zero	zero	End song

For the note function, the first byte contains the pitch value and the second byte is the duration. The nonzero byte for rest determines the duration of the rest. For the voice function, the nonzero value is seven greater than the voice to be selected. Adding seven guarantees that the voice number in memory will be nonzero. The *Play.Song* program subtracts seven to convert it back to a valid voice number. A pair of zeros flags the end of the song.

Watching the Keyboard. There is one aspect of the GraForth note command that should be mentioned here. While playing a note, the word note also looks at the keyboard. If a key is pressed while a note is playing, the note will be cut short. Try executing:

100 255 NOTE

V0	2G 80	R 40
2F 80	2F# 40	V 2
2E 60	2G 40	2F 40
2F 20	2G 80	2F 80
2D 20	2F# 40	2E 40
R 20	2G 40	2F 40
2F 80	3B/ 240	2A/ 80
2G 40	3A 40	2G 40
2G# 40	2G 40	2F 40
3A 40	3A 40	3F 200
3B/ 40	3C 80	R 40
3B 40	3C 40	V -4
3C 40	3D 80	2F 40
R 40	3D 80	V -3
V -2	2G 160	2G 40
3C 80	R80	V -2
3C 80	V1	3A 40
3B/ 40	3C 80	V -1
3A 40	3C 80	3C 20
3A 80	3B/ 40	R 20
2G# 40	3A 40	V -4
3A 40	3A 80	2F 40
3A 200	2G# 40	V -3
R 40	3A 40	2G 40
2G# 40	3A 200	V -2
3A 40	R 40	3A 40
3A 80	2G# 40	V -1
2G# 40	3A 40	3C 20
3A 40	3A 80	R 20
3C 80	2G# 40	V 0
3A 40	3A 40	2C 40
3C 40	3B/ 40	2D 40
3B/ 160	3A 40	3A 40
2G 80	2G 40	2G 160
R 40	2E 40	2F 40
V-1	2G 160	R 40
2G 40	2F 80	2F 40
		E

Listing 3. Stars and Stripes Forever.

and press a key before the note would normally finish. The note will end abruptly. This feature was included to give users the ability to stop the sound without having to wait for the note to end. There is one minor drawback, however: if a key is pressed before the note begins, the note routine will still sometimes click the speaker for a short moment. For a demonstration of this effect, enter the following line and press a key while the first note is still playing:

10 0 DO 100 255 NOTE LOOP

The flutter noise is caused by the subsequent nine notes all clicking the speaker in turn. While this type of effect can sometimes be desirable (it is used purposely in some sound effects routines), it is usually unwanted. Two solutions are possible: Either stop playing notes if a key has been pressed, or clear the keyboard after every note. This second approach continues the string of notes, cutting only one note short at each keypress. Here are examples of both techniques. Try pressing a key while running each:

10 0 DO GETKEY 128 < IF 100 255 NOTE THEN LOOP
10 0 DO CLRKEY 100 255 NOTE LOOP

The note routine itself can be directly modified so that it either ignores keypresses altogether or always acts as if a key has been pressed. In game applications with a lot of sound effects, ignoring keypresses can make the sound cleaner. (Once this modification is made, you can make the change permanent if you want to by saving the GraForth system back to disk with *Saveprg*.) To force note to ignore keypresses, type:

24686 24687 POKEW

To cause note to behave as if a key has been pressed, type:

24688 24687 POKEW

Note can be returned to normal by entering:

-16384 24687 POKEW

PROTECT YOUR APPLE* KEYBOARD

WITH

PLEXA-LOK

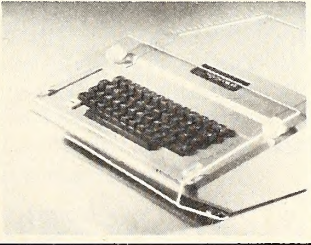
PROTECT YOUR EXPENSIVE INVESTMENT

OFFERED FOR THE FIRST TIME PLEXA-LOK COMES WITH A 30-DAY MONEY BACK GUARANTEE IF NOT SATISFIED!

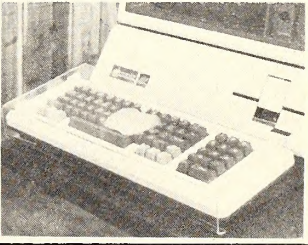
PLEXA-LOK slips up and over the keyboard – then gently snaps into position.

- Your valuable computer is protected from objects and spills directly on top of keyboard which could cost hundreds of dollars to repair!
- PLEXA-LOK allows your secretary to go on break without having to worry about visitors accidentally destroying their hours (and your \$) of work.

• ENHANCES looks of your system



• PROTECTS keyboard from dust



• ALLOWS computer to remain on while unattended

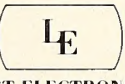
* TM APPLE COMPUTER Inc.

MON - FRI 9:00-5:00

MasterCard and Visa Accepted

Allow 4-6 Weeks Delivery

Dealer Inquiries Welcome



LAST ELECTRONICS
P.O. BOX 1300S
SAN ANDREAS, CA 95249
(209) 754-1800

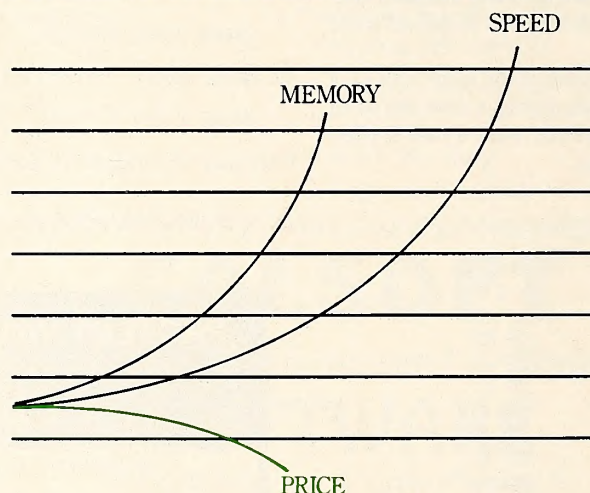
INTRODUCTORY SPECIAL
APPLE II \$19.95
APPLE III \$24.95
FROSTY APPLE 1.50 extra

Prepaid UPS
Continental USA
CA Residents Add 6% Tax

MORE MEMORY.

MORE SPEED.

LESS MONEY.



Hayden Applesoft Compiler Plus.

Speed is what you buy a compiler for. And no compiler runs faster in serious number-crunching than Compiler Plus, because no compiler offers its unique array-vector lookup technique.

But speed isn't all you get. With its DOS relocation software, Compiler Plus lets users with 16K RAM cards compile and execute larger programs using the added memory.

Wait, there's more. You can develop modular programs—with disk overlays, if you like—by taking advantage of Compiler Plus's ability to call compiled programs as subroutines. The compiler supports the sharing of variables between modules in a common data area. The library of runtime routines is fully relocatable, and you can load it anywhere in memory or include it as part of the compiled code.

Even that isn't all. Compiler Plus recognizes the broadest range of Applesoft keywords, including the "&" token. So interfacing with assembly language routines is easier.

By now, you think you're looking at an expensive bit of software. But you're wrong.

The Hayden Applesoft Compiler Plus is actually one of the lowest priced Applesoft Compilers available. Speed, of course. Memory, too, and modularity and compatibility. All for less than you'd expect: just \$99.95.

One more reason to be glad you chose Apple—and Hayden.

Available from your local dealer or call:

1-800-343-1218

(in MA call 617-937-0200)

#19609, DOS 3.3 Applesoft in ROM necessary to relocate DOS

HAYDEN SOFTWARE

Assembly Lines

by Roger Wagner

Everyone's Guide to Assembly Language, Part 29

I/O routines are responsible for handling the computer's communications with the outside world. Their design is also one of the more interesting aspects of machine language programming. We'll spend the next two issues learning how to intercept the I/O vectors of the Apple and implement our own routines.

It will make the next few demonstrations much easier if you disconnect DOS from the I/O system. That's most easily done by running this short Applesoft Basic program:

```
10 IN#0:PR#0:END
```

That will keep DOS out of the way for the upcoming exercises.

Output. In earlier issues we discussed how COUT (\$FDED) could be used to print characters to the screen, to disk, or to other output devices. The general procedure was to load the accumulator with the ASCII value for the character you wanted to print, and then to do a JSR COUT.

To see what happens at \$FDED when you do this, enter the Monitor by means of the usual *call -151*. Then type in:

```
FDEDL
```

The first instruction listed should be a JMP (\$0036). This is an indirect jump to a location pointed to by the byte pair \$36,37. To see where these bytes are currently pointing, type in:

```
36.37
```

You should get:

```
0036- F0 FD
```

This tells you that the jump will be made to \$FDF0, which in this case happens to be the next instruction after the JMP (\$0036). \$FDF0 is called COUT1 and is used only to print characters to the Apple's screen. When output is going to the disk, to the printer, or to some other device, \$36,37 will point somewhere other than \$FDF0.

If you are sending characters to a printer, for example, \$36,37 might point to \$C102. CSW (for Character output SWitch) is the name given to the byte pair \$36,37. A pointer such as this is usually called a *vector*, in that it directs the flow of program control to whatever routine (that is, whatever address in memory) is appropriate at the moment.

The changing of the CSW vector is what happens when you execute a *pr#* command. CSW is pointed to the address *Cn00*, where *n* is the slot number given in the *pr#n* statement. If no device is present in the slot, then no program will be found at *Cn00*. This explains why a Basic program hangs when an improper *pr#* command is given. The computer is waiting for the final RTS from a nonexistent routine. To verify for yourself that the lockup doesn't occur until a character is output, run this program in Applesoft Basic:

```
10 HOME
20 PR#5: REM OR SOME OTHER EMPTY SLOT
30 FOR I=1 TO 20
40 POKE 1024+I,192+I
50 NEXT I
60 PRINT "YOU WON'T SEE THIS"
```

When you run this program, you should see the letters A through T printed on the screen, but the phrase on line 60 should not appear. Things happen this way because the loop on lines 20 through 40 puts the data directly into the screen memory without going through COUT.

Remember that all this time CSW is pointing to \$C500. It's only

when the Y character gets sent to COUT that the computer hangs.

If DOS were installed and line 20 said *print chr\$(4);"pr#5"*, the program would hang on that statement because of the carriage return sent at the end of the print statement. It's instructive to note that the carriage return is not actually needed for the *pr#* to work. Adding a semicolon to the print statement would restore the program to its original semifunctional state.

One would think from the preceding thoughts that hooking up a routine to the output hooks would be fairly simple. The problem is that most of the time you'll want to have DOS active, and DOS has been cleverly designed to do everything possible to keep itself connected. When DOS is installed, CSW actually points to \$9EBD, a portion of DOS, and it's very difficult to get it to point elsewhere.

Specifically, whenever either input or output is done, both vectors are checked to make sure DOS is still hooked up. This means that, even though you could temporarily change CSW, any input-type action would cause DOS to restore itself to the output flow. Here's a program to show this. You'll need to reconnect DOS (pressing reset will do that) to try it:

```
10 HOME
20 PR#0
30 PRINT CHR$(4);"CATALOG"
40 INPUT "TURN THINGS BACK ON";:IS
50 PRINT CHR$(4);"CATALOG"
```

The theory here is that the *pr#0* sets CSW to point directly to \$FDOC, rather than to DOS. This is why the catalog doesn't work in line 30. However, when the input is done, DOS is still hooked up to the input vector. Realizing that the output connection has been lost, DOS thus reconnects itself. Line 40 then performs as expected.

In general, DOS can be disconnected by executing *both* an *in#0* and a *pr#0* within a Basic program, provided that one is done immediately after the other with no input or output done in between. The one-line Basic program used at the beginning of this article to disconnect DOS employs this principle.

Pressing reset will hook things back up any time you want. Notice that these *are not* done as DOS commands such as:

```
10 PRINT CHR$(4);"IN#0": PRINT CHR$(4);"PR#0"
```

An *in#0* or *pr#0* as a direct Basic command redirects I/O to the Monitor. The same commands done as DOS commands set the I/O to DOS.

Let's see just how DOS does handle the output vectors. With DOS installed and active, enter the Monitor and type in the following:

```
36.37 AA53.AA54
```

You should get:

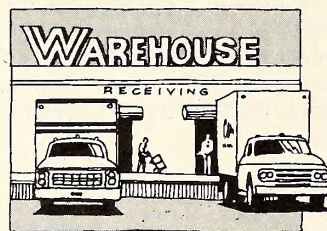
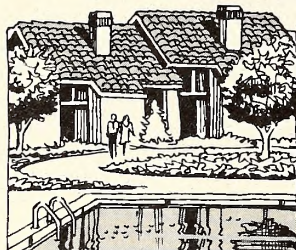
```
0036- BD 9E
AA53- F0 FD
```

With DOS active, CSW points to a main output entry point at \$9EBD. This is the beginning of the section that watches the output for DOS commands. Eventually it does its own indirect jump via the vector at \$AA53,AA54, which completes the path to COUT1 (\$FDF0).

When you do a JSR COUT (\$FDED), then, here's the general flow of things:

1. With the appropriate value in the accumulator, a JSR COUT (\$FDED) is done.

IF YOU OWN OR MANAGE PROPERTY, WE CAN SAVE YOU TIME AND MONEY.



A good property manager has to stay on top of a mountain of information. This means either hours and hours of paperwork, or hiring expensive office help.

WE'VE GOT A MONEY-SAVING SOLUTION:

PROPERTY MANAGEMENT by Continental Software.
It's like having a crack clerical staff—at a fraction of the cost.

YOU SAVE HOURS OF PAINSTAKING BRAINWORK.

This powerful real estate program will tackle your overall management responsibilities and give you more free time to spend developing new business.

And it's remarkably easy to use.

- Does complete transaction bookkeeping for residential or commercial properties.
- Handles up to 1000* units per property.
- Creates comprehensive financial reports.
- Posts late charges automatically.
- Records printable audit trail.
- Computes percentage leases.
- Calculates common area assessments.
- Prepares detailed tenant statements.
- Interfaces with Continental and IBM accounting packages.

Pick up **PROPERTY MANAGEMENT by Continental Software** at your computer dealer. You'll discover how easy it is to replace paperwork with profits.

*Depends on hardware configuration.

Available for: IBM PC™/IBM PC with hard disk and Apple II™



**Continental
Software**

A Division of Arrays, Inc.

**Continental Software, 11223 South Hindry Avenue,
Los Angeles, California 90045,
Telephone (213) 417-8031** Call us collect for more information.

IBM PC is a registered trademark of IBM Corp. Apple II is a registered trademark of Apple Computer, Inc.

2. At \$FDED is a jump to the address specified in CSW (\$36,37). With DOS installed, CSW points to DOS at \$9EBD.

3. When DOS is through looking at the character, it does a jump to the address held at \$AA53,AA54. This normally points to \$FDF0.

4. Eventually an RTS returns control to the calling program.

Intercepting Output. An obvious question now arises. How do we hook our routine to DOS? This basically depends on whether a slot is used or not. If you happened to be writing firmware for an interface card, for example, the pr# command when executed would automatically handle the setting up of CSW to make everything work. If, however, you want to put a routine at a location other than the \$C000 space, another approach is needed.

The procedure is actually fairly simple. All you need to do is set CSW to where you want the output to be eventually sent and then call \$3EA.

For example, let's put a trivial routine at \$300 that merely jumps to COUT1 (\$FDF0). Go into the Monitor and enter:

```
300: 4C F0 FD
```

If you list this routine you should get:

```
300L
```

```
0300- 4C F0 FD JMP $FDF0
```

```
0303- 00 BRK
```

```
0304- 00 BRK
```

To hook it up, type in the following from the immediate mode of Applesoft:

```
POKE 54,0: POKE 55,3: CALL 1002
```

This sets CSW to point to \$300 and then calls \$3EA. The same thing can be done from within a machine language program with:

```
LDA #$00
```

```
STA $36
```

```
LDA #$03
```

```
STA $37
```

```
JSR $3EA
```

```
RTS
```

Once connected in this way, everything will still look the same on the screen. In reality, however, every character going to the screen is now going through \$300. You can check the new routing by entering the Monitor while this routine is installed and typing in:

```
36.37 AA53.AA54
```

You should get:

```
0036- BD 9E
```

```
AA53- 00 03
```

The Monitor, DOS, and Basic all send output via the jump at COUT. This still points to DOS, but now DOS points not to COUT1 (\$FDF0), but to \$300. There, our routine does a jump to COUT1 to complete the flow.

To verify that characters are going through \$300, just type in *poke 768,0*. Or, from the Monitor, type: *300: 0*.

The computer will immediately hang as program flow hits the 00 (BRK instruction) at \$300. The BRK routine in the Monitor will then try to send the break error message through COUT, at which point \$300 will be called again and the process will repeat itself indefinitely.

An interesting point here is that, when COUT is turned off (for instance, a simple RTS at \$300 will do the trick), nothing appears on the screen, despite the fact that the computer is still fully functional. Even though you can't see what you're typing, you could type in *catalog* and the disk drive would come on. The flashing cursor would remain on the screen since RDKEY (part of the input routine at \$FD1B) addresses the screen directly for the cursor.

To experiment with COUT some more, let's try a routine that's a little more interesting. Control characters are normally "invisible" in that they're not sent to the screen by COUT1. If we could detect the control character before it got to COUT1 and could change it to a different value, we could have it display as inverse or as some other visible character.

Normally all characters going through CSW have the high bit set. That is, all values are greater than \$80. Inverse and flashing characters are created by sending characters with a value less than \$80 to COUT. All characters in the range of \$00 to \$3F come out inverse, and all those from \$40 to \$7F are flashing. In general, what this means is that, if the high bit is cleared, control characters will come out in inverse and "standard" characters in flashing.

This is, in fact, how the *flash* and *inverse* commands of Applesoft work. The routine at COUT1 includes a portion that does an AND operation on the value about to be stored on the screen and a mask value stored at location \$32 (called INVFLG, short for "inverse flag"). INVFLG normally holds an \$FF, so no change takes place. However, the Basic commands inverse and flash set the values to \$3F and \$7F, respectively, which produces the desired results.

The following diagram illustrates the INVFLG mask's effect on outgoing characters:

Char sent COUT:	Hex	Binary	Character
INVFLG:	\$C1	%1100 0001	A (Normal)
	\$FF	%1111 1111	—
AND Result:	\$C1	%1100 0001	A (Normal)
Char sent COUT:	\$C1	%1100 0001	A (Normal)
INVFLG:	\$7F	%0111 1111	—
AND Result:	\$41	%0100 0001	A (Flashing)
Char sent COUT:	\$C1	%1100 0001	A (Normal)
INVFLG:	\$3F	%0011 1111	—
AND Result:	\$01	%0000 0001	A (Inverse)

We can do our own specialized processing, though, so as to highlight just control characters. Here's the listing:

```

1 *****
2 * CONTROL CHARACTER DISPLAY *
3 *****
4 *
5          ORG $300

```

```

6 *
7 COUT1 EQU $FDF0
8 *
9 ENTRY CMP #$A0 ; 1ST NON ^ CHR
10      BCS PRINT ; CHAR OKAY
11      CMP #$8D ; LET 'CR' THRU
12      BEQ PRINT
13 MASK AND #$3F ; CLR TOP 2 BITS
14 PRINT JMP COUT1 ; PRINT IT
0300: C9 A0
0302: B0 06
0304: C9 8D
0306: F0 02
0308: 29 3F
030A: 4C F0 FD

```

The routine operation is very straightforward. A comparison is done as each character reaches the routine at \$300. All "usual" characters are sent through to COUT1 unaltered. If a character is found to be a control character, though, a test is done to see if it's a carriage return. If so, that too is passed to COUT1. After all, we do want the screen to look somewhat normal. If a control character (other than a *return*) is found, however, an AND with \$3F converts the character to an inverse character, at which point it will be forwarded to COUT1.

Any control characters generated by a program, with the exception of return (control-M), will now be shown in inverse. When typed from the keyboard, escape, the right arrow (control-U), and control-X won't show up since they are intercepted by the Monitor input routine and never make it to COUT.

Other Output Devices. So far, all we've done is intercept COUT, filter the characters going through, and eventually return control to the Monitor screen routine COUT1. If we had our own output device, this would not be necessary. The point here is to demonstrate the possibility of alternate output devices. Ultimately this could include printer cards, terminals, analog devices such as motors, and more. Such projects are rather involved, however, so for now let's just see if we can write our own primitive screen routine.

The basic model will be to set aside one line of the screen as our display window and to attempt to control text output within that window. To avoid having to create vertical scrolling routines and cursor management routines, we'll limit all output to the single line and scroll text only to the left as each new character is displayed on the right.

If this sounds suspiciously similar to a calculator display, you're right. It should be easy now to see why, with limited resources of display hardware and, more significantly, limited memory for management routines, such a display would be desirable.

Here's the summary of the design points:

BLAZING APPLES

or

Never give a shift operator an even break.

You've read the movie, now see the book.

Direct from its exclusive run in *Softalk*, *Assembly Lines: The Book*—Roger Wagner's book version of his popular column on assembly language—is now playing at a theater near you.

For almost a year now, Apple owners of all ages and walks of life have experienced the ultimate trip in assembly language tutorials, and the word is still spreading. Start the new year off right—see a book.

Join Apple II and its trusty companion, 6502, as they battle source codes, object codes, and load/store op-codes. Thrill to looping with BEQ. Laugh with the addressing mode gang—zero page, implicit/implied, and relative. Cry with shift operators and root for your favorite in the gut-wrenching battle of relocatable versus nonrelocatable code.

Finally, there is the single greatest scene ever printed, *Special Programming Techniques*. Complete and uncut, *Assembly Lines: The Book* includes five appendices, an index, and an introduction—an epic 270 pages in all.

Easily the longest running book in movie history, *Assembly Lines: The Book* is still drawing crowds for every show and selling lots of popcorn and candy bars.

You can get a ticket to the next showing of *Assembly Lines: The Book* by stopping by your local computer store or sending \$19.95 plus \$1.50 shipping to:

Softalk Book
Box 60
North Hollywood, CA 91603

California residents add 6½ percent sales tax.
Apple II is a trademark of Apple Computer Inc.

1. Display will be limited to one line.
2. Characters will be output on the rightmost position.
3. The remainder of the line will scroll to the left to make room for each new character.
4. No control characters will be displayed.
5. The left arrow key, control-H, will be designated as a "clear display" character.
6. No editing capabilities (that is, backspace, forward copy, and so on) will be provided for, except for number 5 above.

Before proceeding, let's digress for a moment to mention the value of the list as a programming technique. If you can't bring yourself to flow-chart, at least make a list to clarify exactly what the program will do. This helps organize your thoughts in a general way before you have to leap in and code the detailed parts. Even if you amend it as the coding progresses, such a list is helpful. Now back to our regularly scheduled program. . . .

```

1 *****
2 *   SPECIAL DISPLAY ROUTINE   *
3 *****
4 *
5             ORG   $300
6             OBJ   $300
7 *
8 LINE       EQU   $700      ; $700-727
9 YSAV1      EQU   $35
10 *
0300: 84 35   11 ENTRY   STY   YSAV1      ; SAVE Y-REG
0302: C9 A0   12         CMP   #A0        ; 1ST NON ^ CHR
0304: B0 11   13         BCS   SCROLL     ; DISPLAY THE
                                CHARACTER
0306: C9 88   14 CHK     CMP   #88        ; BACKSPACE
0308: D0 0A   15         BNE   DONE1
030A: A0 27   16 CLEAR   LDY   #27
030C: A9 A0   17         LDA   #A0        ; SPACE
030E: 99 00 07 18 LOOP1  STA   LINE,Y    ; ERASE A CHAR
0311: 88      19         DEY
0312: 10 FA   20         BPL   LOOP1      ; TILL Y=FF
0314: A4 35   21 DONE1  LDY   YSAV1      ; RESTORE Y
0316: 60      22 OUT1   RTS              ; DON'T SHOW
0317: 48      23 *
0318: A0 01   24 SCROLL  PHA              ; SAVE THE CHAR
031A: B9 00 07 25         LDY   #01
031D: 99 FF 06 26 LOOP2  LDA   LINE,Y
0320: C8      27         STA   LINE-1,Y
0321: C0 28   28         INY
0323: 90 F5   29         CPY   #28
0325: 68      30         BCC   LOOP2      ; TILL Y=$28
0326: 8D 27 07 31 PRINT  PLA              ; RETRIEVE CHAR
0329: A4 35   32         STA   LINE+$27
032B: 60      33 DONE2  LDY   YSAV1      ; RESTORE Y
032B: 60      34 OUT2   RTS

```

After the listing has been assembled, the routine is hooked up to COUT, just like the other routine. You will probably want to type in *home* to give you a clear screen for your display. Once your routine is installed, everything you type should scroll across a line in the upper half of the screen. Notice that all expected output from the Apple is now done on its own custom display. You can list programs, catalog a disk, or do any of the usual operations. Try typing in this command line in Applesoft:

```
FOR I=1 TO 127:PRINT CHR$(I);:NEXT I
```

When you press return, you should see a whole series of characters go whizzing through the window, ending with the lower-case letters (although they may not look quite right if you don't have a lower-case display device). Remember, the left arrow will clear the display window.

The routine itself is fairly simple. The only memory locations defined are the memory range for the screen line at \$700, a temporary storage byte used by COUT1, and our routine to preserve the contents of the Y register. The program also contains some instructive points of style.

On entry, the Y register is saved. This is because the "official" output routine, COUT1, returns with all registers (A, X, and Y) intact when called. Many other routines in Basic and DOS assume that all output will be done as safely, so we must honor that convention as well.

Once Y is saved, the value passed to this routine in the accumulator is appropriate to the ASCII value for the character to be printed. As was done in the control-character display routine, a check is done for control characters. Remember that in this program all control characters, even return, will be filtered out. If a control character is detected, the comparison on line 12 will fail, and a check will be made for the left arrow (control-H). If the character is not a control-H, we will immediately exit via DONE1, where the Y register will be restored and no character will be displayed.

If a control-H is detected, the CLEAR routine clears the display window to spaces. A note here about the BPL on line 20 to determine when the loop is done: You might think that we would want to use a BNE to find out when Y reached zero. The problem is that, when Y reached zero, the branch would fall through and we would not store a space at \$700, so the leading character could not be cleared from the display window.

Because we know that Y is started at \$27, we can test for Y reaching the value of \$FF as it "wraps around" after reaching zero. An alternate approach would have been to make line 18 say STA LINE-1,Y and to start Y with a value of \$28 on line 16. LINE-1 would evaluate to \$6FF, and thus we could use the BNE test. Either way works, but this second approach provides a way of showing another programming technique. After clearing the window, the routine returns via DONE1, again without displaying any new character.

If a legitimate character is detected on lines 12 and 13, control flows to SCROLL, which makes room for the new character to be displayed. Because we'll need to use the accumulator for the scrolling, the character to be printed is pushed onto the stack to save it for future use.

At that point, the Y register is set to \$01 in preparation for the memory move to follow. Line 26 loads a character from one position, after which line 27 will store the character in the position immediately to the left. For example, on the first pass through, the value will be loaded from \$701 (\$700,Y where Y=1) and stored at \$700 (\$6FF,Y where Y still equals 1).

Notice the use of two different base addresses for the indexed addressing. This allows us to use the same value in the Y register to load and store at two different addresses. The loop is repeated until we have moved all the characters one position to the left. The routine then falls into PRINT.

PRINT first retrieves the character to be printed from the stack by means of the PLA on line 31. It then stores the character at \$727. The code is written this way (LINE + \$27) to show that you can, in most assemblers, add any amount to an address. You aren't limited to the usual ADDR, ADDR+1 that's most often seen.

After the character has been stored at \$727, the Y register is restored and the routine returns via DONE2.

You should verify for yourself that the accumulator and Y registers are always left in their original conditions regardless of whether the return is done through DONE1 or DONE2. Since we didn't use the X register, it also will be preserved.

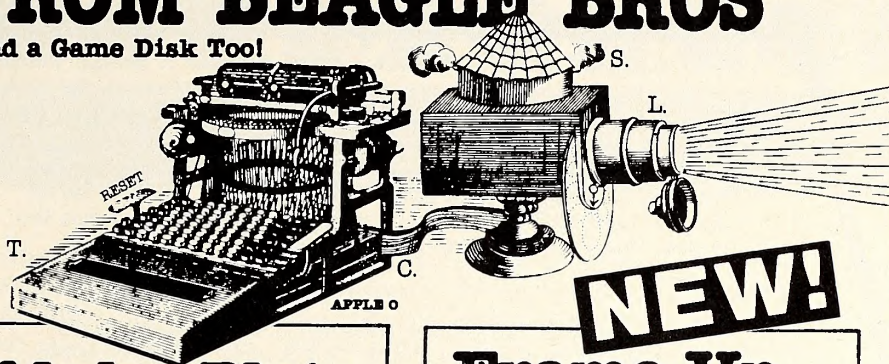
Summary. Here are the main points of our discussion on the output vector.

1. The main output vector is called CSW, which stands for *character output switch*. CSW is the byte pair \$36,37.
2. DOS maintains its own output vector at \$AA53,AA54.
3. DOS can be disconnected by executing the Basic statement *in#0:pr#0* (not as a DOS command).
4. DOS can be reconnected by pressing reset.
5. Any attempt to alter CSW directly with DOS active will be undone by DOS on the first input statement.
6. To hook a routine into the output vectors, execute the equivalent of *poke 54,LB:poke 55,HB:call 1002* where LB and HB are the low and high order bytes of the address you wish output to be directed to.
7. If you're handling all the final output, end the routine with the usual RTS. If you're merely filtering or watching the output, you must eventually pass control on to where the final output will be done, usually COUT1 (\$FDF0).

Next time we'll look at the input hooks and at how to use your own routines on the listening side of the Apple. See you then! ■

NEW APPLE UTILITIES FROM BEAGLE BROS

And a Game Disk Too!



Alpha Plot

Hi-Res Graphics/Text Utility
by Bert Kersey & Jack Cassidy

Here are a few of Alpha Plot's useful graphics features. Compare with other graphic utilities at any price—

HI-RES DRAWING: Create hi-res picture and charts with text, on both pages; all **appendable to your programs**. Optional Xdraw cursor (see lines before drawing). Mix colors & Reverse (background opposite). Circles, Boxes, Ellipses; filled or outlined. **Compress Hi-Res to 1/3 disk space.** Relocate any portion of an image anywhere on either page. Superimpose too & convert hi-res to lo-res for colorful abstracts!

HI-RES TEXT: Beautiful upper/lower case with descenders (no hardware required). Color and reverse characters positionable anywhere (no vtab/htab limitations). Professional-looking **proportional spacing** and adjustable character height and letter spacing. Sideway typing for graphs too!

\$3950

- ☐ Unprotected disk (48K min.)
- ☐ Beagle Bros Apple Tip Book #4
- ☐ Peaks & Pokes Chart



Beagle Bag!

12 Games on One Big Disk
by Bert Kersey

Twelve great games from our classic Beagle Bros collection—TextTrain, Slippery Digite, Wowzo, Magic Pack, Buzzword... Almost all of our "Game Pack" games have been updated and re-released on one jam-packed unprotected disk! **ALSO INCLUDED** is our "Beagle Menu" greeting program (description under "Typefaces" disk on this page).

Compare Beagle Bag with any 1-game locked-up disk on the market today!

All 12 games are a blast, the price is right, the instructions are crystal clear, AND the disk is copyable! You can even list the programs to see what makes them tick!

\$2950

Unprotected. Paddles NOT required. Beagle Menu works with all normal-DOS disks. Includes Peaks/Pokes Chart.

Frame-Up

Graphics Display Utility
by Tom Weishaar

Frame-Up is a very-high-speed Apple "slide projector" utility that lets you create professional-looking displays of intermixed hi-res, lo-res and text pages on any Apple. Frame-Up is very easy-to-use and above-all **FAST**, allowing you to load hi-res pictures, for example, in **2 1/4-seconds**; that's three-times faster than normal Paddles or keyboard are used to change images in forward or reverse order, skipping pages if you want. OR presentations may be left unattended, with **each page individually timed** to appear and remain on the screen from 3 to 99 seconds, as you choose.

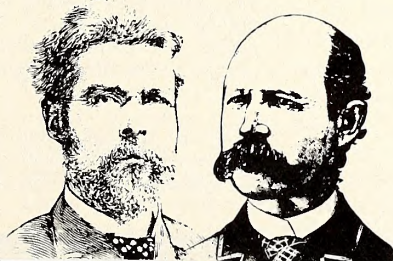
Frame-Up includes a sophisticated black and white **text screen editor** that lets you create text "slides" as part of your show. You can even add type "live" on the screen during your presentations. Up to 17 hi-res or 136 lo-res/text pages may be stored per disk. One or two drives are supported. The order and timing of your graphics and text images may be easily (and instantly!) arranged and rearranged. Frame-Up includes a **display module which may be copied** and distributed to your associates so they can run your display, as you designed it, on their Apple or ANY Apple!

Frame-Up is ideal for store displays, presentations to the boss, club programs, trade show booths, product demos, promotions, seminars, conventions, classes, and so on.

\$2950

Machine language. Unprotected. 48K minimum. Peek/Poke Chart included.

BEAGLE BROS DISKS ARE UNLOCKED AND UNPROTECTED. THIS MEANS EVERY PROGRAM IS INSPECTABLE, CUSTOMIZABLE, IF YOU WANT, AND COPYABLE, GIVING YOU THE MOST FOR YOUR SOFTWARE DOLLARS. DON'T SETTLE FOR LESS.



4315 Sierra Vista, San Diego, Ca 92103
714-296-6400

"APPLE" is a registered trade mark of You-Know-Who.

Apple® Mechanic

Shape Writer/Byte-Zap Utility
by Bert Kersey

Another best-selling multiple-utility disk—Nine useful, listable, copyable and customizable programs—

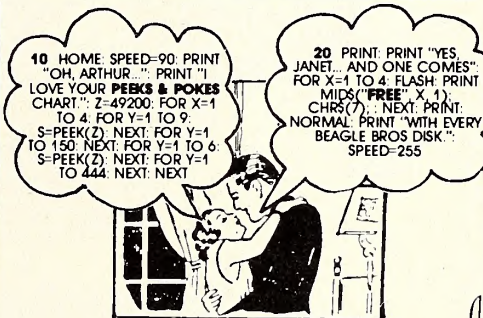
SHAPE EDITOR: Put professional hi-res animation in your programs. Keyboard-draw any shape and let your Apple write a shape table and store it on disk. Design large and small **custom typefaces** too, with special characters. 6 fonts on the disk. **LIST** able demos show how to use shape tables to animate games, graphic displays, and attractive Charts & Graphs. A valuable time-saving utility/learning tool.

BYTE ZAP: A MUST utility. Rewrite any byte on a disk by loading a sector onto the screen for inspection. **Hex/Dec/Ascii** display optional. Examine bytes via cursor control; enter hex, dec or ascii to change. Create illegal filenames, restore deleted files, change greeting program names, repair/protect disks, change DOS, examine program files. Clear illustrated instructions show how disk data is stored and how to access it. Very educational.

MORE: A disk **PACKED** with useful music, text and hi-res tricks **for use in your programs**. A great demo-writer program, useful hi-res utilities and educational, entertaining documentation.

\$2950

- ☐ Unprotected disk (48K min.)
- ☐ Beagle Bros Tip Book #5
- ☐ Peaks & Pokes Chart



NEW! Typefaces

for Apple Mechanic

Here are more hi-res fonts for Apple Mechanic's Xtyper and Hi-Writer programs—26 of them at last count, both large and small, all **proportionally-spaced** and positionable anywhere on either hi-res screen. Most are **full 96-character fonts** many with special graphic characters. Each character (from "i" to "o") of every font (from "Ace" to "Zoo-loo") is, of course, editable with Apple Mechanic's Font Editor.

BONUS: Here's BEAGLE-MENU! A unique greeting program that displays **only the catalog file names you want** on the screen (for example, only locked-Applesoft files, or only Binary files) for one-key cursor selection. Just hit Return to Run, Brun or Exec the program at the cursor. Many other features—Space-on-Disk, Load/Block option, forward and backward catalog "scrolling" for easy file location, and optional sector-number elimination. **PLUS** the ability to **swap file names** in your catalog!

\$2000

Unprotected. Beagle Bros' Apple Mechanic disk is required to utilize the type fonts. Beagle-Menu works with all normal-DOS 3.3 disks.

If you don't find our products at your Apple Dealer, tell him to phone Beagle Bros, 714-296-6400, OR his favorite software distributor.

NEW RELEASES

HI-RES COMPUTER GOLF 2

Pro-Courses Series



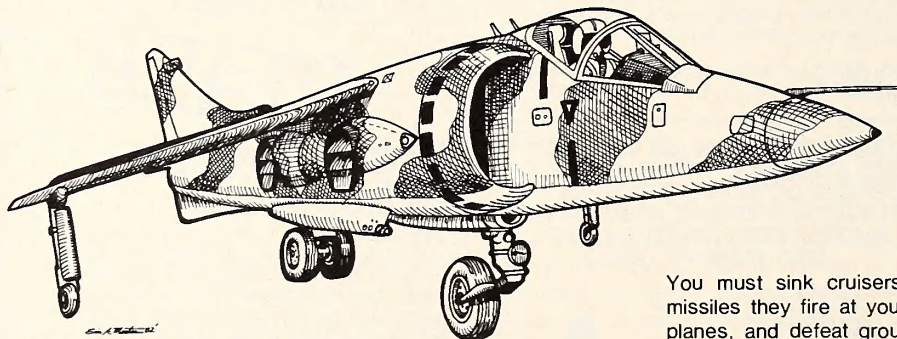
Spring is on its way, but why wait? You can be playing golf indoors now with Hi-Res Computer Golf 2, Pro Courses Series. This computerized version of one of America's most popular sports can be more of a challenge than the real thing! Introduced last year as Hi-Res Computer Golf, this improved version for 1983 requires even more skill and strategic planning than the original. Plus, you get all these great *new* features:

- Real professional golf courses presented in a multi-diskette system. The "Master" package and multiple "Pro-Courses" packages contain three professional courses each.
- Improved graphics for accurate reproduction of actual courses.
- Improved sounds.
- Auto-swing Option will take your swings for you but will allow you to override and take your own swing.
- Improved golf rules.
- Scorecard Archives Processor stores up to 20 complete or incomplete scores on each disk.
- Tournament-Security Option: Playing of nationwide tournaments is now possible thanks to a special feature which guarantees that the scores on a printed or handwritten scorecard have not been altered. Also prevents the golfer from re-playing a designated round.
- Plus many more improved features.

Hi-Res Computer Golf 2, Pro-Courses Series Master Disk Package with three Pro-Courses retails for \$34.95. Additional Pro-Courses diskettes with three courses each will be available for \$24.95.



JUMP JET



A Loyal island territory has been captured by a powerful army of outsiders. You must fly your Loyal Air Force JUMPJET on missions to regain the island. Your JUMPJET can outfly any aircraft in the sky, but you must deal with its limited fuel and weapons carrying capabilities.

You must sink cruisers and submarines while dodging bullets and missiles they fire at you, defend your carrier against kamikaze fighter planes, and defeat ground forces on the island. If you succeed, the general of the Outside Force will surrender.

JUMPJET is a fast-paced arcade-style game with state-of-the-art action and animation. It is bound to become one of your all time favorites. And it's available now for only \$29.95!

These and many more exciting Avant-Garde Creations games are available now at your local dealer. Or you can order direct from us by mail or phone. Visa, MasterCard or American Express accepted. Order today!!

AVANT-GARDE CREATIONS

P.O. Box 30160

Eugene, OR 97403

(503) 345-3043

AVANT-
GARDE
CREATIONS



□ **Mark Pelczarski** has appointed **Dave Albert** marketing director of **Penguin Software** (Lake Geneva, IL). He will oversee all the company's promotional activities, "keep the icebox full of beer," and generally take over the business concerns previously handled by Pelczarski. President Pelczarski will be going into hibernation, penguin-style, to catch up on his programming.

□ **Multi-Media Video** (Santa Clara, CA), exclusive international Apple distributor to the Middle East, is offering to translate suitable programs from software developers into Arabic on a license, royalty, or percentage basis. MMV has made hardware changes to the Apple II and III, making them fully functional Arabic microcomputers. For more information, contact **Jeffrey Armstrong**, manager of education and training.

□ **David Ferris** speaks again! The outspoken software industry consultant sees hard row-hoeing ahead for corporate users of personal computers. Presenting the results of his latest study at the San Diego conference of the U.S. Trade Association for Data Processing Service Organizations, Ferris said, in effect, that corporate users buy their micros to perform a few functions and wind up using them for a lot more than they planned—sending memos and documents, swapping database information with company mainframes, tying mainframe and micro financial modeling packages together, and feeding mainframe applications programs.

"In some ways the outlook is very exciting, because of the tremendous power that these new tools will provide," says Ferris. "On the other hand, many users will find that each new feature will increase the problems they're having. . . . There's a high chance that the service and support burdens will get out of hand." Problem areas will be in hardware and software incompatibility, time-consuming education, equipment tracking, and the control and interpretation of key corporate data. "The hardware and software suppliers won't be able to provide much of what's needed," predicts Ferris, "and many companies will find their micros stuck in managerial and technical quagmires."

□ **Corona Data Systems** (Westlake Village, CA) has signed agreements with eleven regional stocking distributors for more than \$12 million in hard disk subsystems. The distributors, with their regions of heaviest support, are: Victor Electronics (New England area), F.A. Components (metropolitan New York), Jersey Micro Systems (mid-Atlantic), Com-

putermaxx (southeast), Kaltronics (northern central region), High Technology (central region), Acorn Data Products (mountain and western states), Sigma Distributing (northwest), Waybern (southern California), Vitek (southern California), and Datamex (Canada). Corona's new eastern regional office is located in Closter, New Jersey. The company is currently hiring for its midwestern office, probably to be located in Dallas.

□ **Advanced Logic Systems** (Sunnyvale, CA), demonstrating its willingness to give bright young people an opportunity in the business

unnamed company and moved to a new address. They are now at 8943 Fullbright Avenue, Chatsworth, CA 91311. Their new quarters occupy 18,000 feet of space, ample room for **Dave Gordon** to display his 1982 Single Player Game award, bestowed upon the company for *Snack Attack*.

□ **Robert O. Redd** has been appointed director of microcomputer services for the national accounting firm of **Seidman & Seidman** (Grand Rapids, MI) by **B. Z. Lee**, managing partner of the firm. The appointment came pursuant to the firm's inauguration of a nationwide micro-



ALS president Dick Ribas, left, welcomes new board member Steve Wozniak.

world, has found a place for **Steve Wozniak**, cofounder of Apple Computer, on its board of directors. Wozniak says he is "delighted to be able to contribute to the research and direction of products that support Apple's product line."

□ The formation of **Ultrasoftware** (Issaquah, WA) has been formally announced by its president, **Christopher P. Anson**. The company's business plan calls for the transportation of their UltraCode interpreter, the heart of their animated adventure game software, to other microcomputers, cutting program development time. Vice president and general manager **Larry Franks** anticipates "a series of product lines, from games to applications software, based on the UltraCode interpreter in a wide range of hardware environments." The company is marketing its wares through a network of selected distributors, avoiding direct sales. "It is very important to preserve the profitability of the retail stores in this industry. We all depend on their collective success," observes Franks.

□ **DataMost**, publisher of computer games, business software, and computer educational texts, has consummated a merger with an as-yet-

computer assistance service to help companies and individuals convert accounting records to micro software. Services include conversion studies, installation assistance, and problem solving, plus bookkeeping and accounting functions.

□ **Bruce Harris** has been named director of marketing at **Quark Engineering** (Denver, CO), producer of Apple software for office automation applications. Harris will supervise Quark's national advertising and sales promotion activities, developing marketing strategies to introduce new product lines and broaden the company's dealer base.

□ **Comshare** (Ann Arbor, MI), the computer software and services firm, has acquired 180,000 shares of its common stock in unsolicited transactions and appointed two new vice presidents. **Charles J. Palmer**, formerly northeast area sales manager, is now vice president of eastern sales operations. **Norman R. Neuman, Jr.**, vice president of product development for commercial services businesses, is also heading up product development and marketing for the company's Commander Decision Support Sys-

tem product line. Both men joined the company in 1976.

□ **Businessland**, a retail center specializing in electronic business equipment, has opened its first store in San Jose, California. The retail center, covering word processing, data management, financial analysis, and accounting applications, caters exclusively to owners and managers of small businesses. "We are now at a point where the microcomputer offers the right combination of capabilities and price to meet the needs of many small businesses," says Businessland founder and president **David A. Norman**. "By focusing our attention on that segment and its specific problems, we can offer the training, service, and systems that truly fit their needs." Plans are to have fourteen company-owned centers open by the end of 1983 and one hundred by 1985, with fifty more operated as joint ventures.

□ **Tandy C. Hamilton** has been appointed technical support specialist for **Evotek**, the Fremont, California, manufacturer of 5 1/4-inch rigid disk drives. Hamilton, formerly an applications engineer for Shugart, will be responsible for technical support and service activities in the western region.

□ **Alphacom** (Campbell, CA), makers of thermal printer/plotters and print mechanisms, has appointed **William Clark** executive vice president and chief operating officer. He will be responsible for managing marketing, finance, operations, and product development as well as for overseeing future expansion. He was previ-



William Clark, Alphacom executive vice president and chief operating officer.

ously vice president of operations with Plantronics, a telecommunications equipment manufacturer.

□ **MCE** (Kalamazoo, MI), a producer of educational software, has opened a West Coast office in Irvine, California. Company president **William G. Zirneklis** has relocated to the new office. National sales manager **Allen Kemmerer** is now operations manager at MCE's Kala-

mazoo headquarters. Says Zirneklis, "The West Coast office is another important step aimed at better meeting the current and future needs for microcomputer-based programs for schools, adult training, and home education."

□ **USUS** (La Jolla, CA), the UCSD-Pascal User's Society, has elected new board members and officers for 1983 and announced an increased commitment to user education, forming four new special interest groups (SIGs) and adding two free tutorials and four volumes to its software exchange library. **Randy Bush** of Volition Systems is the new chairman of the society's board of directors, which consists of N.C. "Arley" Dealey of Volition, **Nancy Lanning** of SofTech Microsystems, **Robert Peterson** of Texas Instruments, and **Michael Ikezawa**. Peterson will also serve as president of the organization. Other officers are **A. Winsor Brown**, vice president; **Michael Hadjioannou** of Ticom Systems, treasurer; and **Thomas Woteki** of Ferox Microsystems. The next scheduled meeting of USUS is April 22-24, 1983, in San Diego.

□ Public relations for **InfoWorld** (Palo Alto, CA), **Broderbund** (San Rafael, CA), **Diablo Research Corporation** (San Jose, CA), and **Relational Memory Systems** (Sunnyvale, CA) are now being handled by **Zhivago Public Relations**, a Palo Alto firm specializing in high-tech accounts.

□ **Mesa Industries** (Wilmington, DE), parent company of Eastern Software Distributors and the National Software Company in Delaware, has announced the election of **J.W. Lang** as president. He was formerly controller with ESD. Also elected were **Joseph S. Edwards**, treasurer, and **Thomas A. Jackson**, secretary.

□ The board of directors of **Lifeboat Associates** (New York, NY) has appointed **Dr. Edward H. Currie** president and member of the board. Formerly vice president and chief operating officer, Dr. Currie will be responsible for marketing and daily operations.

One of the oldest companies in the microcomputer business, long in the practice of advising customers on the best ways to increase office productivity via software, Lifeboat has decided to put its money where its mouth is. "We've been growing so fast, we haven't had time to step back and see how we could apply office automation to ourselves," says Currie. "We have not availed ourselves of the technologically superior tools literally at our fingertips." Lifeboat is now using the computers installed in all departments to perform the tedious repetitious tasks that computers do so well and to speed up the workflow in the office.

□ **Centronics** (Hudson, NH) has contracted with **Leasametric** (Foster City, CA) to add Centronics matrix and line printers to Leasametric's line of computer peripherals and telecommunications and microprocessor test and development systems. They will carry the model 6081 line printers and model 353 Printstation for short-term rental through a network of sales offices, inventory centers, and test laboratories in the United States, Canada, and West Germany.

WHAT ARE YOU WAITING FOR???

Are you tired of waiting for DOS to load and save files? Are you tired of waiting for DOS to finish so you can type again? Are you tired of waiting for your printer? When you buy **Diversi-DOS™**, you won't have to wait any more! Here's why:

1. **DOS speed-up:** Apple DOS 3.3 takes 18 disk revolutions to read a single track, whereas **Diversi-DOS** reads or writes a track in just 2 revolutions. This speeds up file processing tremendously (see table).

2. **Keyboard Buffer:** **Diversi-DOS** allows you to type at any time, as fast as you can, without missing a single character.

3. **Print Buffer:** **Diversi-DOS** can use a RAM card (16K-128K) to temporarily save characters before they are printed. Thus, your computer won't have to wait for your printer to finish.

4. **DDMOVER:** **Diversi-DOS** can now be moved to a RAM card for increased memory with BASIC programs.

Diversi-DOS, the **QUADRUPLE** utility, requires a 48K Apple II or II+ with DOS 3.3. A simple, menu-driven installation program is included on the un-protected disk. So what are you waiting for?

Send \$30 to:

Diversified Software Research, Inc.
5848 Crampton Ct.
Rockford, IL 61111
(815) 877-1343

Visa/Mastercard accepted

Apple is a registered TM of Apple Computer, Inc.



	APPLE DOS	DIVERSI-DOS
SAVE †	27.1 sec.	5.9 sec.
LOAD †	19.2 sec.	4.5 sec.
BSAVE*	13.6 sec.	4.1 sec.
BLOAD*	9.5 sec.	2.6 sec.
READ**	42.2 sec.	12.4 sec.
WRITE**	44.6 sec.	14.9 sec.
APPEND**	21.3 sec.	2.3 sec.
* Hi-res screen	† 80-sector BASIC program	
** 52-sector text file		

THOUSANDS OF INNOVATIVE APPLE-COMPATIBLE PRODUCTS ARE GATHERING AT THE 1983 APPLEFESTS

Don't miss Applefest for 1983—the world's largest exposition **exclusively** for Apple owners.

Each show features hundreds of exhibits of the newest, state-of-the-art products for the Apple. You can see and try out software for every conceivable application—from arcade games to investment programs, music to machine language, teaching systems to accounting packages, word processors to graphics processors. You can sample hundreds of different peripherals, including printers, hard disks, modems, memory cards, video displays and synthesizers, plus accessories, publications and invaluable support services.

Applefest is **the** place to view the most technologically advanced products for the Apple.

At Applefest you can try out and compare hundreds of products in an exciting, information-filled environment. You can learn more in two days than you could in months of visiting computer stores and reading trade journals.

And, best of all, everything on display at Applefest is for sale at special show prices, so you can save hundreds—even thousands—of dollars by making your purchases at the show.

This year a whole new conference program is being introduced to Applefests nationwide. The program will show you how to squeeze absolutely the most power, versatility and usefulness out of your Apple.

Seminars and workshops will teach you the ins and outs of buying software intelligently, using spreadsheet and database programs, putting Apples to work in classrooms and using the Apple as a management tool. You'll learn about new programming languages, important applications for telecommunications, exciting ways to use graphics and more.

No matter what you do (or want to do) with your Apple, the Applefest seminars and workshops will help you do it better. Software Spotlights will provide an in-depth, understandable look at hundreds of different software packages. Each Spotlight will cover the features, capabilities and limitations of a group of packages, to help you find the software that's best suited to your applications. Experts will be on hand to answer all your questions.

So plan on attending Applefest for 1983—the biggest and best Apple-user show ever. It'll be a mind-expanding experience for both you **and** your Apple.

To receive more information about attending Applefest, including the Conference, Seminar, Workshop and Panel Discussions Program, call 617-739-2000 or 800-841-7000 (Boston). For information about exhibiting at Applefest, call 800-343-2222 or 717-739-2000.

Produced by Northeast Expositions, nationwide producers of the National Computer Shows, PC '83 and CP/ '83, 826 Boylston Street, Chestnut Hill, Mass. 02167.



Applefest/Anaheim:

Friday-Sunday, April 15-17, 1983
Anaheim Convention Center
11AM-5:30PM daily

Applefest/Boston:

Friday-Sunday, May 13-15, 1983
Bayside Exposition Center
11AM-5:30PM daily

Applefest/San Francisco:

Friday-Sunday, October 28-30, 1983
Moscone Center
11AM-5:30PM daily

Applefest Show & Conference Preregistration Request

1. Complete this form (or a facsimile) and mail it with a check payable to Applefest, to National Computer Shows, 826 Boylston Street, Chestnut Hill, Mass. 02167. Use a separate form for each person preregistering.

2. All preregistration requests must be received no later than 7 days prior to the event. Telephone or credit card orders cannot be accommodated.

3. For one-day-only registrations, indicate the specific day you will attend the event.

4. Badges and tickets will either be mailed back or held for pick-up at the Show's preregistration desk. In either case the preregistrant will be notified by mail of our receipt of their order. All preregistrants will receive the Schedule of Conferences Program, a list of exhibitors and hotel reservation forms, prior to the event.

5. It is recommended that attendees preregister in order to receive the advance information which allows them to preplan and schedule their visit to the Show and Conference. However, badges and tickets can be purchased at the Show.

ANY QUESTIONS? Call 800-841-7000 (Boston).

Daily Registration Fees

Exhibits Only \$8 per day Conference Program \$15 per day

Check Applicable Box:

☐ Enclosed is my payment for

quantity
Applefest three-day
Exhibits and
Conference
badge(s) at \$48.
You save \$21.

☐ Enclosed is my payment for

quantity
Applefest one-day
Exhibits-only
badge(s) at \$8.

☐ Enclosed is my payment for

quantity
Applefest three-day
Exhibits-only
badge(s) at \$18.
You save \$6.

☐ Enclosed is my payment for

quantity
Applefest one-day
Exhibits and
Conference
badge(s) at \$23.

Name _____

Firm (if any) _____

Address _____

City _____ State _____ Zip _____

Day Telephone: Area Code (_____) _____

I will attend the Applefest to be held in

☐ Anaheim ☐ Boston ☐ San Francisco

For one-day attendees: I will attend the event on (day of week) _____

I have included the name(s) of each person attending.

Announcing A Major Software Breakthrough:

Now Your Apple™ Computer Can Write It's Own Programs!



If you need a program for:

- Data Base Management
- Mailing List Maintenance
- Invoicing
- Sorting Data
- Searching Data
- Generating Menus
- Creating Title Pages
- Writing Subroutines
- Creating Screen Routines
and more...

Then this is the program for you:

**THE
CREATOR™**
A BASIC PROGRAM GENERATOR

No Knowledge Required!

Even if you never saw a computer before, you can produce professional programs the first time and every time by answering simple English questions. Sounds Amazing? Well it's all that and more!

Easy To Use

You can go from the creation mode to a finished program in a matter of minutes, just by interacting through menus and prompts. No code words or complex flowcharting is required.

Professional Power In Your Computer

Not only can programs be produced quickly and easily without prior programming knowledge, but even program lines and increments can arbitrarily be set.

The programs produced with THE CREATOR™ can be listed, modified, compiled and even merged into other existing BASIC programs. The source code belongs to you to do with it as you see fit! No strings attached!

The Benefits

THE CREATOR™ generates structured BASIC programs automatically, so that the program code is always standardized, self-documenting, efficient, and it is easy for anyone to understand. Your final program will be error free and completely modular. Once it is generated, the program code can be used over and over again or put together for different applications or combinations. Not only that, but the program code can be generated in a matter of minutes without programming a single line of code!

The Price

We saved the best for the last. The price of THE CREATOR™ for the APPLE™ is only \$200 (U.S.). The individual modules alone are worth that! In order to use THE CREATOR™ you will need two disk drives, DOS 3.3 and 48K memory.

Discover tomorrow's way to write programs on your APPLE™ today! Programming has never been easier or quicker. Hundreds of users agree that after using THE CREATOR™, they can never go back to conventional methods again!

Available Today

THE CREATOR™ for your APPLE™ is available today from your local dealer. If your local dealer does not carry THE CREATOR™, ask him to give us a call.

IBM PC version is \$300. Features may vary.
*Versions for other computers available soon.

IBM is a trademark of International Business Machines.

Apple is a trademark of Apple Computer Inc.

THE CREATOR™ is a trademark of Software Technology for Computers, written by Gary E. Haffer



Software Technology for Computers
PO Box 428
Belmont, MA 02178
(617) 923-4334

NEWSPEAK



The background picture is from *WARPITOUT*—Veeder's own face jazzed up with the help of ZGRASS, an advanced graphics language. Inset, Veeder and her tools.

CHICAGO COMPUTER ARTIST ACCELERATES TO WARP SPEED

Just south of the loop, south of the La Salle Street banks, south of the Michigan Avenue hotels, south of the State Street department stores, lives an epic host of poor, underprivileged Chicagoans. Artist Jane Veeder is on the leading edge of a new age in electronic expression, yet she lives in the slums on South Halsted Street in a split-level studio apartment.

In that apartment, Veeder and her fellow artist Phil Morton have an impressive array of computer gadgetry, including a Datamax UV-1 Graphics Computer, a Sandin Image Processor, and assorted video equipment. CRT buses shake the building when they roar up Halsted just outside the front door, but they have little effect on the concentration of Veeder and Morton.

Veeder's latest creation, *WARPITOUT*, made quite an impressive debut at the SIGGRAPH '82 Art Show in Boston this summer. Held annually for the last nine years by the Association for Computing Machinery's Special Interest Group on Computer Graphics, SIGGRAPH is the Academy Awards for computer artists.

In Veeder's own words, *WARPITOUT* is an "interactive computer graphics installation, supporting real-time color graphics processing of a digitized (facial) image of the current player using a menu-driven selection of drawing and processing programs, housed in a video-game cabinet."

Veeder's manifesto further explains the genesis of this computer game cum computer

art program: "I had developed a number of generalized real-time computer graphics process program tools that I loved to play with. Some I had adapted into animation sequences, streamlined and stripped of their interactivity; others were still too slow for one-way performance. The recent development of our digitizer offered a wonderful opportunity to present these interactive programs in a menu-driven context for playing with everyone's favorite image . . . themselves."

Burned into eprom and housed in a video-game cabinet, *WARPITOUT* allows the user/player to be Lon Chaney, Salvadore Dali, and Vincent Van Gogh with a digitized image of your own face. It was a big hit at SIGGRAPH, but it raised many questions as to its status as a true work of art.

"Is it art? That's the first question. Let's go on to the next one," Veeder offers. How about an artistic video game? "With *WARPITOUT*, I'm using the universal appeal of your own face as a pretext to indulge in computer graphics more directly than you get to do with a commercial video game, where you're interacting with a finished product in restricted ways. ZGRASS makes possible an artist-integrated project such as *WARPITOUT*, as contrasted to the corporate-designed video games accomplished by teams working in fragmentary and specialized roles."

All this talk of video games and video game technology is not coincidental. Veeder uses a system that was developed in her neigh-

borhood; video game behemoth Bally is based in Chicago. She has just smartly adapted the technology to other, more personal uses.

A more traditional work of art is *Montana*, a three-minute color videotape complete with stereo sound. Every year Veeder takes a trip into the western mountains, and *Montana* is an attempt to capture her "love [of] the physical world out there and its attendant information aura."

Montana features a number of forms (mountain, hawk, buffalo, earth, Sears Tower, video camera, and more) made all very simple (in the way the Japanese mean it). Veeder took these simple forms and developed the visual relationships with a fluid program of her own design. The program enables her to draw with any of a collection of "snaps" (screen sections stored as arrays) and tools to make lines, boxes, and other shapes. She worked on the piece for a long time, producing a dynamic,

GOTO page 229, column 1

JOIN Micro Co-op

Over 3,000 members
worldwide

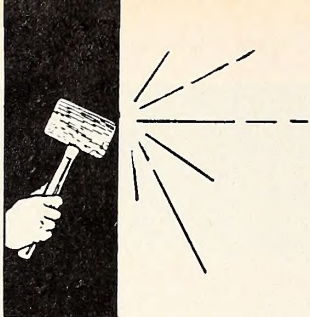
- Co-op Newsletter (6-10 Issues/yr.)
- Latest Information
- Software reviews and comparisons
- Member feedback
- Software and hardware at discount prices

Information you need
to make software decisions
you won't regret.

Membership \$5.00

Micro Co-op

P.O. Box 714
St. Charles, IL 60174
Phone (312) 232-1777



Tax Whacker

COLLECT TAX DATA
WHILE BALANCING YOUR CHECKBOOK!
SEE NEXT YEAR'S 1040 THIS NOVEMBER!

MY CPA FLIPPED!

I'm Bob Payne, co-creator of Double Check—Apple software that collects tax data while balancing checkbooks.

Last November 29th I met with my CPA. I showed him two print-outs—both done with software costing less than \$150.

The first print-out was a list of capital gains, rents, interest, and other income. Also included were my medical expenses, business losses, interest paid, and other deductions. The list showed all my tax items check-by-check plus category totals. It showed January to November tax items.

Getting this information was a snap. My program, Double Check, had collected it during the year as a by-product of checkbook balancing. In less than three minutes I sorted, listed, and printed the data.

The second print-out was generated by EZ Tax, a new tax preparation program allowing VisiCalc-like "what if" tax calculations. With it, and the Double Check data, I created a sample 1040. The job took about 45 minutes—start to finish.

Much to my surprise, my 1040 showed I had a "surplus" of deductions and business losses amounting to several thousands of dollars. True, I would have no taxes to pay, but I would "lose" most of these deductions...unless something changed.

THERE'S STILL TIME

"Well", said my CPA, "Let's change something. You still have time to get on the ball and collect those bad debts. You still have time to sell some more computer programs and increase income. You still have time for profit taking from your stock portfolio. You still have time to..."

You get the idea.

FREE APPLE, PRINTER, AND DRIVE!

No question about it: using these "lost" deductions saved me the cost of my Apple, its dual drives, plus my Epson printer. Best of all, my tax planning was not "after the fact", but up-to-the-minute and accurate.

WHERE THE MONEY IS

But Double Check is important other ways, too. In banking, for example. Banks have money to loan, but they often judge your credit worthiness on how well you keep your checking accounts. Lots of NSF's, overdrafts, or other mess-ups? Your bank will wonder why. With Double-Check you get in balance, and stay in balance.

Your CPA will love Double Check, too. That's because he uses your check stubs, cancelled checks, and bank statements like a stone mason uses mortar, rock, and iron. With them, he builds a permanent wall of records that protect your business. Cash may come and go, but like old sweepstakes tickets, cancelled checks last forever.

FOREVER RECORDS

That's why Double Check is so important for your business and personal records. With it, you have "forever records" of all your important transactions. Any financial questions? Just fire up your Apple...then sort, list, or total. You get answers fast, and there's no need to pay a \$100-an-hour CPA to research records, either.

EASIEST BALANCER YET

Best of all, Double-Check is easy to use. Here's how it works: The program displays a facsimile of your checkbook. You see 17 items per screen, and you can scroll for more. It's a computerized replica of your checkbook. Balancing is easy because "running balance" errors appear immediately.

Reconciling your bank statement is even easier: just enter the numbers of checks returned from your bank, and instantly the computer displays the date, payee, code, and amount for your approval. You can enter check numbers in any order, so there's no need to sort checks.

100 USER-DEFINED CODES

As the computer balances your checkbook, you give each check its own category code. You get 100 "you name 'em" codes. You can change, add, or delete code labels anytime without affecting data. You even get an on-screen code dictionary. Just press "Ctrl" O and see all your codes plus your code labels. You can split checks (or deposits) between codes, too.

So, Double Check fits business like a bone fits a socket. Professional offices, service companies and small businesses are using it in dozens of ways:

- Income by category
- Expenses by department
- Trust account control
- Instant income statements
- "Down-and-dirty" profit statements

Double Check works great for "budgeting with actuals". Just enter dummy amounts in each code category. As checks (or deposits) are entered, the category totals increase or decrease thus producing the "over/under" amounts.

SCREEN SEARCH				
#	DATE	PAYEE	CODE	AMOUNT
148	2/16	BLANE CLINIC	40	60.00
148	2/16	G COCHRAN MD	40	50.00
150	2/16	BLANE HOSPITAL	40	20.20
157	3/ 3	F MICHELIN MD	40	23.50
158	3/ 3	R BROUGHTON MD	40	51.25
166	3/ 3	G COCHRAN MD	40	20.00
222	4/29	G HARPER MD	40	50.00
222	5/11	PETERSON MD	40	58.00
265	6/ 9	LAKESIDE HDSPTL	40	100.00

CTRL S SAVE
FILENAME FIB82 432.95

See totals for expenditures or income.

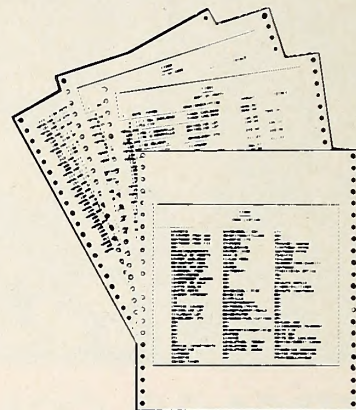
SMART CUSTOMERS

Some customers even use it to control petty cash, to watch credit cards, and to control asset accounts. One San Francisco businessman uses it as a mini-accounts receivable. In place of check numbers, he enters invoice numbers. As payments come in, he enters them and thus creates a list of "aged accounts receivables".

ENGLISH BUTLER

The program will never trap you; nor will it "crash". It's polite as an English butler. It says "Please" and "Thank you." It has loads of reminders, and even tells you what's wrong when you goof. (Example: try running it with the drive door open and see the neat little message)

Unlike other balancers on the market, there are no monthly closings to worry about; no "cut off dates". Better yet, you can split checks or deposits between codes...a very handy accounting tool.



Seven ready-to-print reports: code dictionary, cleared and uncleared checks, lists by category, grand totals, and more.

MULTIPLE ACCOUNTS

The program allows multiple accounts. It will manage all your checking accounts. Even Apple's Personal Finance Manager can't do that.

The program is copy protected. Back up disk \$20. Here's how we market it. We sell directly to you. You get a money back guarantee. If you don't like it, we'll give you a prompt, courteous refund. (So far we are running one-in-forty returned.)

So why not give us a try? Order now, and we'll include a free tutorial disk. With it you'll master the program in thirty minutes.

INTRODUCTORY
PRICE

\$49⁹⁵

Price includes master disk, tutorial disk, 30 page manual. For Apple II+, 3.3 DOS, single disk O.K. Printer optional. Apple III, too. We accept Visa, Mastercharge, C.O.D. or Check. All orders add \$2.00 shipping.

Special: send \$75 and we'll include two extra program disks! That gives you plenty of back-up.

Orders only phone 24 hours:

800-648-4780

or mail check to:
Computer Tax Service
Box 7915
Incline Village
NV 89450

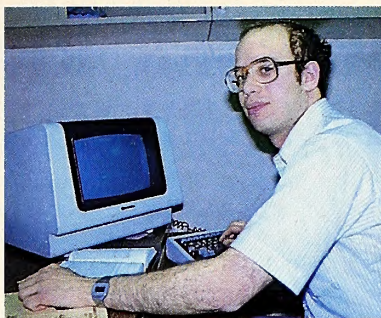
Dealers. Write for price list and demo package.

**DOUBLE
CHECK**

THE FUN MONEY MANAGER FOR YOUR APPLE

Jewish Institute Imparts Religious Law with Computers

Rabbi Allan Rosenbaum seated before the terminal by which he accesses the Responsa database—a space-age tool for investigating age-old problems.



It should come as no surprise that technology is becoming the handmaiden of religion. The same computers that form the brains of multimillion-dollar corporations and lord it over scientific research institutes are being harnessed for the never-ending task of analyzing religious history and law.

One of the most ambitious projects involving computers and religious study was started in 1968 at Bar-Ilan University in Israel. A decade later, close to two hundred volumes of Halachic Responsa (the writings of ordained rabbis) dating from the eighth century to the present were assembled on a database using a large mainframe computer.

A little over a year ago the Institute for Computers in Jewish Life, based in Chicago, became the North American Center for the Bar-Ilan University Responsa Project. A copy of the database in Israel was put on an IBM 370/168 and a terminal was set up in the Institute at Chicago's Water Tower Place.

Using a TeleVideo terminal with a Hebrew text chip, Rabbi Irving Rosenbaum and his son Rabbi Allan Rosenbaum gain access to the Responsa database to perform complicated search routines and print out the results on a Decwriter IV also equipped with a Hebrew text chip.

According to the younger Rosenbaum, the Responsa Project provides very sophisticated search programs that go beyond the mundane and the everyday. For instance, you can search for the accumulated responses to the question: "When, according to Jewish Law, is the exact moment of death?" Or: "May an orthodox Jewish doctor send a patient to another physician to administer treatment which he himself may not perform because it is forbidden according to Jewish Law?"

Jewish scholars have benefited greatly

from the Responsa Project, but it's not limited just to religious and ethical problems. Due to the vast amount of data stored, which covers a myriad of subjects, it's possible to glean information, for instance, about interest rates charged by European merchant bankers for the fourteenth through the sixteenth centuries. Both Rosenbaums are encouraging regular scholars and historians to use the Responsa Project for their own nonreligious research.

When people wish to perform searches, they must first fill out a comprehensive "search profile." The desired results are broken down into "an exact formulation of the search topic." You can have the whole database searched or just specific works, which you must indicate in the original Hebrew. Ultimately, the process is narrowed down to key words and key phrases.

"The scope of Jewish Law is so vast," explains Rabbi Allan Rosenbaum, "that performing a search for a subject like 'women and Judaism' is not practical. You have to narrow it down."

Director of the Institute for Computers in Jewish Life, Rabbi Irving Rosenbaum, is looking forward to the day when the Responsa Project will become a global database, with research centers in many different locations around the world. Eventually, personal microcomputers will be able to gain access to the Responsa database, bringing the service into individual homes. It's an ambitious project that attempts no less than uniting an entire people in and through computers.

The elder Rosenbaum feels there is no conflict with being a serious religious leader and a user of high technology. "The computer is mind-boggling, while at the same time it suggests new juxtapositions. In a nominal way, it's creative."

CHICAGO ARTIST

continued from page 227

arresting audio-visual experience.

Veeder and her partner Phil Morton are only two of many computer artists living and working in the Chicago area. Tom DeFanti and Dan Sandin of the University of Illinois at Chicago Circle have been very influential, mainly through their own development of new graphics technology. "I'm standing on a whole bunch of people's shoulders," says Veeder.

Veeder came from the world of video synthesis, which she feels is quite wonderful

but akin to sex. "It's not too interesting for those watching." She supports herself by doing outside consulting work in the Chicago area, mainly instructing people how to use the ZGRASS language. She also says she's extremely addicted to real-time computer graphics.

"I am almost completely uninterested in still images other than photos for promotion or documentation. Real-time graphic performance resulting in a dynamic visual process is my priority and the motivation for my continuing growth as a programmer."

Living in a slum or not, Veeder is making history in computer art.

Our Software Catalog Is Attracting A Crowd

You Can See Why!

Everyday Catalog Tax Specials

- Tax Manager
- Tax Preparer
- Tax Beater

Strictly Soft Ware 1-800-848-5253

To receive your free catalog right away, send this coupon to the address below. Do you want our ☐ Apple or ☐ IBM Catalog?

NAME _____

STREET _____

CITY _____

STATE _____

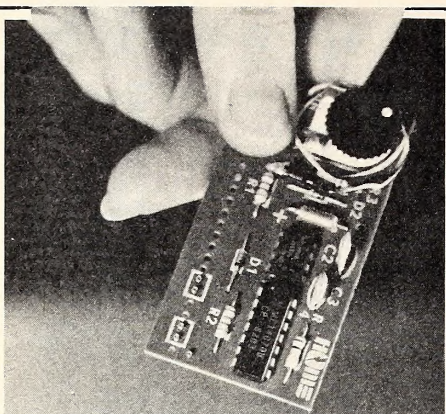
ZIP _____

PHONE () _____

Strictly Soft Ware
P.O. Box 338
Granville, OH 43023
Phone Orders & Technical Assistance: 1-800-848-5253
In Ohio: 1-614-587-2938



ST



SPEED UP WORD PROCESSING PROGRAM EDITING VISICALC

**the REPEATERRR™
WITH
AUTO REPEAT &
HIGH SPEED CURSOR**

"The best Apple II keyboard
enhancement for the money."

"Excellent documentation,
very easy to install."

"LLLLove your Repeaterrrr!"

Apple II keyboard adapter

Repeats any keypress, including
control characters for rubout, scrolling,
etc. Featured on professional termi-
nals. On/off control and adjustable
delay to match your typing touch.

high-speed repeat

TWO SPEED REPEAT, keyboard select-
able. The best part. Touch Apple's
repeat key to DOUBLE the repeat rate.
Great for long cursor moves. Zip
through text, program, or across a
VisiCalc spreadsheet to get there
FAST. A must for 80 column displays.

easy installation

Remove Apple top and plug onto
25-pin connector between keyboard
and encoder board (Rev. 7 or later).
Compatible with all software, hard-
ware, and Apple warranty.

no risk—30-day trial

Check, MasterCard, VISA (incl. card
no. and exp. date). Prompt shipments.
Full refund within 30 days.

only \$24.95 each

Add \$2.00 per order shipping/handling (\$5.00
foreign). Ohio orders add \$1.63 per unit sales tax.

Dealer inquiries invited.

HOME

HIGH ORDER MICRO ELECTRONICS

17 RIVER ST. CHAGRIN FALLS OH 44022
PHONE 216-247-3110

APPLE IS A TRADEMARK OF APPLE COMPUTER, INC.
VISICALC IS A TRADEMARK OF VISICORP.

WARNER REELS FROM ATARI'S UNEXPECTED DROP IN PROFITS

Pity the poor investor. Practically nothing's a blue chip stock these days. Especially not if the company dabbles in the VCS game market. And especially not if the company is Warner Communications.

Warner Communications, for those of you who missed Bugs Bunny, and Errol Flynn, once was Warner Brothers Studio.

Filmmakers fell on hard times in the late sixties and early seventies, and Warner fell right along with the rest of them. It seems that folks just couldn't be motivated to go out to a movie. Out went old management and in came new, in the person of Steven Ross, still fearless leader of the entertainment conglomerate.

Ross took the remainder of Warner's dwindling assets and diversified the company—as indicated by its present name. He took Warner into cable television; their QUBE system, pioneered in Columbus, Ohio, remains the most advanced cable system in the country. But where Ross really struck it rich was in celluloid and silicon.

Dating essentially from the release of *Star Wars*, people returned to movie theaters in droves. *Star Wars* was a Twentieth Century-Fox production, but *Superman* was a superhit that filled Warner's coffers with almost as much lucre. Warner's television production division was also on a roll during that period.

This turnaround in entertainment fortunes was most fortuitous because Ross had his eye on a company called Atari. Nolan Bushnell's firm had Magnavox's Odyssey system on the run, but the mid-seventies were not a good time for a young company to look to the stock market for expansion financing. So, for \$28 million, Warner picked up the promising gamemaker.

The stock market was not exactly buoyed by the news. What the devil did a bunch of prima donna movie people know about games anyway? Perhaps nothing, but by that time it didn't matter. In its first year under the Warner umbrella and with the financial help of the parent, Atari reported profits—not sales, mind you, but profits—of \$25 million, nearly recouping Warner's investment in one year and making the smart money on Wall Street sit up and take notice.

By 1981, Atari had sales of \$1 billion, practically a monopolistic hold on the low end of the home entertainment market and what looked like an eternal money-machine. Oh my, did the investors buy. In five years, they drove Warner stock from less than five dollars to more than fifty dollars a share, mostly on the basis of Atari's strength.

Investors little noted nor long remembered the chinks in Atari's armor. It didn't seem important that Atari's computer line was slow—or perhaps retarded is a more accurate

assessment—in capturing public fancy. It didn't seem germane that Mattel, Coleco, Milton Bradley, and others were taking dead aim at Atari's VCS market with more advanced machines. The Vic 20 and the TI 99/4, priced competitively and full-bodied computers instead of just game machines, appeared to be only nuisances.

Atari appeared to have the hot machine and the hot software, led by *Pac-Man*, and an unstoppable momentum. Alas, for Atari, the old adage that there's nothing older than yesterday's news may be replaced by one that says there's nothing older than yesterday's technology.

The company was absolutely ponderous in getting product to market. In December of 1981, they reported back orders of between two and three million units for *Pac-Man*. But they couldn't bring the game to market for several more months. What was worse, when they did bring it to market, it was only a pale version of the arcade favorite. Rumor has it that Atari has warehouses full of unsold *Pac-Man* units.

None of Atari's other software captured the imagination of new buyers either, and Atari didn't have the rights to *Pac-Man*'s successors in the arcades—*Donkey Kong* and *Frogger*. Even souped-up sales of the Atari 400 and 800 computers couldn't offset the inroads being made by Mattel and Coleco in the VCS market.

So it came to pass in December that Warner somewhat shamefacedly reported that their earlier earnings projections for the last quarter of 1982 were too high. Actual earnings would be much more modest. And Atari's performance was being blamed.

To an investment community that had come to believe that silicon was beautiful, Warner's Atari announcement had the impact of heresy. Warner stock did not open on the day of the announcement until there were only ninety minutes left in the trading day.

Then it dropped \$1.3 billion (that's no typographical error) in value in the next week. When Warner went, it took just about everybody with it. Down went Mattel, dropping in value by nearly \$200 million in a bear market that caused its stock not to trade for a day and a half while order was being restored. Coleco stock dropped. Imagic had to postpone a planned public offering.

Under the category of its never rains but it pours comes more bad news for Warner. Investors had previously discounted an upstate New York theater scandal involving two Warner directors. It's alleged that they got caught with their hands in the cookie jar in a strictly minor league scam about a decade ago. One served on Warner's three-man office of the

GOTO page 233, column 1

Software Degree a First

Seattle University Students Engineer Computer Projects

In June of last year, twenty-two Seattle University students made history of a sort when they received the master's of software engineering degree—the first of its kind.

The program participants, mostly working industry professionals who attended classes at night, learned about software engineering, system analysis, system design, implementation, and validation. Taking two courses per quarter over a two-year period, the students focused on such topics as database design, data security, computer graphics, and human factors.

Seattle University initiated this unique degree program in 1979, but the work of creating it began a couple of years earlier. A similar program, started in 1980, can be found at the Wang Institute of Graduate Studies in Tyngsboro, Massachusetts.

The intent at Seattle University was to devise a program that would emphasize practical, usable applications, complementing the existing computer science department, which emphasizes more theoretical concerns. For help in designing the preliminary curriculum, the university turned to Boeing Computer Services, a big name in computers in the Seattle area. Boeing also supplied some of the necessary funds, as did Weyerhaeuser, a large wood products company in the area, and Alcoa Aluminum. Hewlett-Packard of Menlo Park, California, contributed the computing system that's used—an HP-3000.

When it came time to implement the program, the administration sought the expertise of Dr. Kyu Lee, whose experience with computers includes being a specialist at Fermi National Laboratory, teaching computer science courses at various universities, and working for E G & G, a high technology firm, in real-time systems and management. Lee teaches some of the program's classes himself, while the other courses are conducted by faculty members Eric Frankel and Robert Glass, or by specialists brought in by Lee from the business community. A course on data security, for example, would be taught by someone who deals with this issue all the time, most likely someone from a bank or from a large corporation like Boeing.

At present, some ninety students, representing about forty companies, are enrolled in the program. Admission requirements include a minimum of two years' experience using computers and the bachelor degree in some "quantitative discipline." Majors that fit this category are computer science, mathematics, and engineering, among others. In addition, students must be able to program, preferably

in Pascal, C, or some other structured language; Cobol is also acceptable.

According to Dr. Lee, "The goal of the program is to teach software professionals how to design and/or manage a reliable software system." Students in the program follow out the "software life cycle, learning how software is produced and maintained from conception, to development, to delivery, to termination of the product." In addition, says Lee, the program puts a heavy emphasis on management techniques and communications skills that participants will need in their future work as software designers and project managers.

The culmination of the program is the nine-month-long "software laboratory," in which all students take part. Breaking up into teams of three to five, they create "a fairly decent-sized software system," going from conception to delivery. "The approach is a rigorous one," says Lee, "since all analysis, design, and implementation must be done properly."

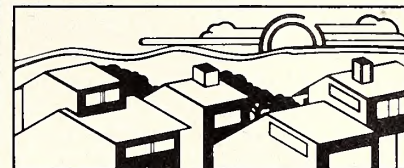
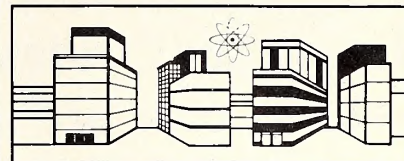
The projects that students work on during this phase of the program aren't meant as mere exercises. They're suggested by someone at the university or by someone in the business community who sees a need for a particular kind of software system. During the "requirements definition" phase, students and their clients discuss and spell out what's needed, in an effort to ensure that the final product is something that will be really useful.

Some projects are completed by the original teams that started them. Among the systems completed so far are an accounts payable system written in Cobol, a library circulation system (also in Cobol), and an ultrasound simulation in Apple III Pascal that's designed to teach scanning techniques to medical professionals. An ongoing endeavor is Lee's own pet project—a relational DBMS on the IBM pc, to which the students are taking a subset or "phased" approach.

During the software laboratory portion of the program, the project manager position rotates. This gives each student the chance to learn and practice the special kinds of skills the role requires.

When a project is in the analysis stage, a major part of the project manager's job involves getting the full cooperation of all team members. If one or more team members are lagging behind the rest, it's the team leader's responsibility to motivate them. If all else fails, there's a mechanism, similar to firing, for dealing with a student who just doesn't manage to perform adequately. So far, though, says Lee, "we haven't had to use it."

TECHNOLOGY MEETS REAL ESTATE



The REAL ESTATE CONSULTANT™

*Three Years In Development
(New - Version 2.0)*

*Now Available For Public Use On:
IBM PC 1.1, 64K, 2 Disk Drives
Apple II & III, 48K, 2 Dr., Videx
TRS 80's, 48K, 2 Disk Drives
(CP/M & CBM Coming Soon)*

*The Complete Real Estate Analysis And
Financial Analysis Software Package
For Everyone From Students To
Professional Investment Counselors*

*Amazingly Simple Operation . . .
Input as per provided questionnaire
and screen prompts.*

*Full user control of disk files,
printer and screen . . .
8 year operations and tax shelter reports.
8 year resale projections.*

Compare These Features:

- Totally Menu Driven
- Full Screen Input Editor
- Amortization Schedules—Monthly
- Depreciation Schedules—ACRS
- Up To 8 Mortgages With Wraps
- Syndications, Partnerships
- Component Depreciation
- ROR's, ROI's and IRR's
- Save 200 Files Per Diskette!
- Personalized Automatic Paging
- Presentation Quality Printouts

*The REAL ESTATE CONSULTANT
IS NOT - spreadsheet templates
IS NOT - pieced together modules*

*The REAL ESTATE CONSULTANT
IS - A Powerful, Menu Driven,
Stand Alone Software System!*

*at only \$275.00
demo disk available for \$10.00*

*Phone orders accepted: (805) 682-8927
CONSULTANT SYSTEMS INC.
3704 State St., Suite 311
Santa Barbara, CA 93105* **CSi**

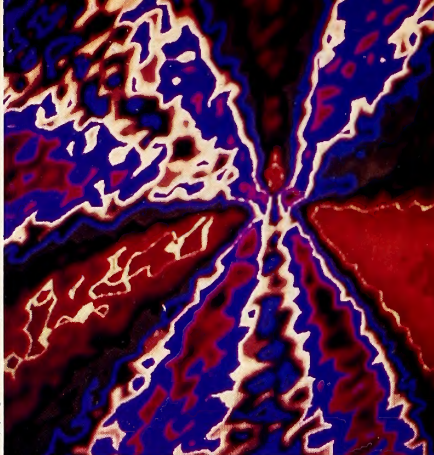
East Coast Computer Film-maker Creates Works of 'Pure Art'

Lillian Schwartz is an East Coast artist who says she needs to work in the materials of her time like she needs to eat and sleep.

In the sixties, one of her sculptures, *Proxima Centauri*, combined some of the mechanics, effects, and textures of the era. It was a large black minimal structure topped by a plastic dome, on which slides were projected. A proximity detector caused the dome to recede into the black unit when a viewer stepped close. A water tank above the sculpture bathed it in ripples, giving the surface of the piece a gelatinous look.

Schwartz's mysteriously kinetic work of art was chosen to be displayed in The Machines Exhibition at the Metropolitan Museum of Art in 1968. It was placed next to a computer-generated graphic, *Studies in Perception I*, that was created on a mainframe by a scientist at Bell Laboratories in Murray Hill, New Jersey. Schwartz was immediately smitten by the graphic piece, and says she "was all over it to see how it was done." Her enthusiasm eventually led her to become an artistic filmmaker using one of the most sophisticated tools of her time: the computer.

Copyright 1983 Lillian Productions



Schwartz believes that the computer is ideal for creating "pure art." Above, one image from her most recent endeavors, an untitled work still in progress.

Her numerous short films made over the last decade have won Schwartz international recognition, and she continues to receive commissions for more. Best known for her experimentation with new technology, she is a pioneer in the use of the digital computer as a medium in the arts. She believes her access to the largely unexplored canvas of the computer has defined her role as an artist: to develop the computer as a tool for pure art.

When Schwartz began her work at Bell Labs by invitation in 1968, computer art was in its Stone Age. Artists worked only in black and white, programming was done on punch cards, and "interactive" was a concept still in the works. Her first piece, a still graphic entitled *Head*, was produced under these restric-

tions on an IBM 360-50 mainframe. The system she used allowed her to scan and digitize a drawing of a head, using tiny face symbols to replace the gray values.

"I had always used sound and motion in my sculpture," she explains. "When I discovered that a simple change in the computer's instructions created a variation, animation was the next logical phase for me. The computer pushed me into it after about a year." Then came a commission to do a computer-generated film.

The film was a four and a half minute abstract entitled *Pixilation*, made in 1970. "If you were lucky back then, you turned in your punch cards and got a tape with eighty-five frames on it the next day. At twenty-four frames a second, I thought I'd never get it finished," she says. "I ended up animating half of it by hand, frame by frame. The programming consisted of throwing on boxes, 2-D squares, and rectangles, using the random number generator for variation. Then I worked on an optical bench to give it color."

A television interface became available to the artist in 1974, allowing Schwartz and her computer science co-creators to shoot a series of animation frames off a monitor. "It was our first controlled shooting," she explains. "The programs could be written and run all night. We would compute, then shoot. However, we lost some resolution in the process, but at least we were out of the Dark Ages. Up till then, you could only see what you were doing in your head."

The technological advantage of a PDP 1145, with a digital drum that could store pictures, allowed Schwartz to preview her work for the first time. "We were free to make decisions and edit in the computer," she says. It also had the video interface she had found so liberating. She used real-world input, pictures of birds, for her film *L'Oiseau* that was created using this system.

A new phase of mixed media opened up for Schwartz when she gained access to a PDP 1140 with a video/visual communication system attached. It was used to make a film of choreographed dancers, done in false color, in 1978. The system allowed the storing of images in a camera and the frame numbers in a computer, facilitating the easy manipulation of images and the mixing of live-action footage with animation. The editing process for Schwartz became a little like playing a musical instrument. *Poet of His People*, a documentary on Chilean poet Pablo Neruda interspersed with footage of narrators in a studio and images of dancers and sea birds, likewise evolved from this period.

Nowadays, Schwartz's computerized artwork is much more interactive than it was five years ago. "I can really apply a lot of technology to my artistic vocabulary by just using buttons and joysticks for preliminary sketchwork. We have unbelievable resolution and a choice of over 65,000 colors," she says. "I can make instant evaluations, compare palettes, display the choices, and make decisions."

EASY-TO-USE APPLE II SOFTWARE FOR TELECOMMUNICATIONS AND DATA TRANSFER

DATA*TRANS

Compare DATA*TRANS with its competitors:

Features	DATA*TRANS	DATA CAPTURE 4.0	ASCII EXPRESS	TRANSEND 2	VISITERM
Automatic logon access	ALL SERVICES	NO	LIMITED	LIMITED	NO
Transmission baud rate	300/1200	300	300	300/1200	300
Time to load 18K text	21 sec.	89 sec.	70 sec.	83 sec.	CAN'T LOAD
Quick scan of textfile	YES	NO	NO	NO	NO
Converts for VisiCalc	YES	NO	NO	NO	NO
Maximum # of lines	NO LIMIT	500	800	NO LIMIT	NO LIMIT
Line/Memory counters	BOTH	LINE	NO	NO	MEMORY
# Text Editor commands	9	3	6	2	1
Auto-answer: # re-calls	NO LIMIT	1	1	1	1
Simult. Copy/List/Print	ALL THREE	COPY ONLY	COPY/PRINT	ALL THREE	COPY ONLY
Remote control of Apple	YES	NO	NO	NO	NO
# phone numbers	NO LIMIT	0	18	4	0
Menu Access Delay	0 sec.	0 sec.	0-9 sec.	0-10 sec.	0 sec.
Frequency of Menu change	FEW	SOME	SOME	FREQUENT	SOME
Displays control characters	YES	NO	NO	NO	YES
Prompted transmission	YES	NO	YES	NO	NO

AUTO LOGON—With a few keystrokes, you can auto-dial and log on to Dow Jones News/Retrieval, the Source, and other services. No more phone numbers, ID's, account numbers and passwords to remember.

VISICALC, VISIPLLOT, VISITREND LINKAGE — Conversion of any data to the required format for input to the Visi-series. Transfer of VisiCalc files among computers. Auto-Dial/Auto-Answer, Remote Operation and a Powerful Editor.

SIMPLY THE BEST—Fast • Reliable • Versatile • Easy to use.

Three configurations on one disk at one price: 300 baud, 1200 baud, 40 and 80 column — \$100. For the Apple II. Available from your local Apple dealer or directly from Abt Microcomputer Software (add \$3.00 for shipping). Hardware supported: Micromodem II, Smart Modem, SSM AIO Card, SSM AIO II Card, Apple Communications Card, Videx Videoterm 80-Column Board.

ABT
MICROCOMPUTER SOFTWARE



A division of Abt Associates Inc., Dept. SOFT, 55 Wheeler St., Cambridge, MA 02138

Telephone (617) 492-7100

Apple II is a trademark of Apple Computer, Inc. Transend and SSM AIO are trademarks of SSM Microcomputer Products, Inc. Data Capture 4.0 is a trademark of Southeastern Software. VisiCalc, VisiPlot, VisiTerm and VisiTerm are trademarks of VisiCorp. ASCII Express is a trademark of Southwestern Data Systems. Micromodem II and Smart Modem are trademarks of D.C. Hayes Inc. Videoterm is a trademark of Videx, Inc.

One area of her artistic concern revolves around the languages of computing. "Each language has its own personality. This can be an artistic disadvantage, producing too similar results, because each one has character that invades the work. I find it provocative to work in many different languages because it gives me a larger variety of programming tools to chose from."

Schwartz has also found that her way of thinking about art has changed as computers get more challenging as a medium. "They provoke me into ways of creating that would have been impossible before, opening up a whole new world of visual imagery."

"I also find we're doing more pre and post-production work now, not producing much in real time anymore, except to conceptualize. Certain algorithms are used to smooth out the edges of an image, and these take time to compute. I'm at a point where I'm willing to give up real time for better resolution. Technology is changing so rapidly that in the very near future we may have both."

WARNER REELS

continued from page 230

president, while the other was treasurer. Worse news, coming as the company's stock was plummeting, was informal implication of Ross in the illegal doings. No charges were filed, but it added fuel to the fire.

Then came news that Atari's chairman, Raymond Kassar, dumped a large block of stock the day before the revised earnings estimate was released to the public. The Security and Exchange Commission's rules specifically forbid individuals with inside information from taking advantage of such data. Kassar says the sale was part of an end-of-the-year tax strategy planned and executed prior to his knowing of the earnings downturn and that he tried to stop the sale when he learned of it. He's cooperating in an investigation, but Warner stock took another buffeting.

It'll be awhile before investors swallow Warner estimates whole. But the underlying weaknesses seem still to be going unnoticed. Little mention is made of the maturation of the market. And less mention is made of the stiffer competition from low-priced computers.

Even the top-of-the-line models are now siphoning off sales that might have previously gone to the VCS machines. George Schuetz of Computerland of South King County, Washington, serving the Seattle area, notes a change in the type of customers the store now gets. Schuetz says they're more knowledgeable about their options and know better what they want. And, even though the \$300 computers are selling in every drugstore and discount department store, Schuetz says people are coming in to buy Apples and IBM Personal Computers.

Warner may have a tough time recapturing that \$1.3 billion.

TAKE CONTROL

OF THE MOST POWERFUL TAX PROGRAM IN THE FIELD

For users of **VisiCalc**® software — a complete tax analysis, simulation, and preparation package — **SofTax**. A program that makes it easy to tackle your clients' tax problems and your own. It is designed for individuals, partnerships, and corporations. **SofTax** expands the **VisiCalc** capability and simple menu-driven format to give you an easy-to-learn, easy-to-use, professional tax package.

SofTax is efficient, economical, and comprehensive. You can set up, modify, and finalize a model before **SofTax** prepares the final returns. And the model itself can be simulated before you commit to permanent changes.

Test drive **SofTax** for 30 days at no risk under our no-questions-asked money back guarantee.

*VisiCalc is a registered trademark of VisiCorp. Apple is a registered trademark of Apple Computer.

Take a **SofTax** test drive with 30 day money back guarantee

☐ Yes! I'd like to test drive **SofTax**.

Send the tax deductible **SofTax** program at \$395.00. *CT residents add 7 1/2% sales tax.

Check type of system: ☐ Apple II ☐ Apple III ☐ IBM/PC ☐ Other _____

NAME _____

COMPANY _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

Check method of payment ☐ Check or Money Order enclosed ☐ Visa ☐ MasterCard
☐ American Express Interbank # _____

SIGNATURE _____

CARD # _____

EXP. DATE _____

I understand that if within 30 days I am not delighted with my new **SofTax** program, I may return it for refund.

Design Trends P.O. Box G, Wilton, CT 06897 203-834-1560

NEWSBITS

□ **It's a Small World.** The United Nations has designated 1983 World Communication Year and is encouraging projects aimed at boosting communication systems in underdeveloped countries. Projects suggested so far range from planning a national telecommunications network in the African country of Benin to designing low-cost radio equipment for other African countries. One aim of World

Communication Year, according to the United Nations, is to stimulate "an awareness among youth of the impact of communications infrastructures on today's society and their fundamental importance for the economic and social development of every nation." Schoolchildren can enter a worldwide photographic and drawing competition called "Youth in the Electronic Age, '83." The United Nations stresses that all the projects will be funded voluntarily by private individuals, institutions concerned with communications, and governments. The United States and West Germany have each donated more than a million dollars, and many other countries have contributed smaller amounts and

other kinds of support. Italy, for instance, intends to stage a series of conferences on the influence of the atmosphere on the transmission of digital signals.

□ **Over Here, Part Two.** Late in 1982 the Semiconductor Research Corporation, funded cooperatively by several large American semiconductor companies (*Softalk*, August 1982, page 176), announced its first research contracts with universities. Just under one million dollars will go to Cornell University for research into microstructures. Eighteen faculty members and a group of graduate students will investigate the properties of integrated circuits with minimum dimensions measured on the scale of atomic spacings. A total of \$1.75 million will go to the University of California at Berkeley and Carnegie-Mellon University for joint research in computer-aided design of integrated circuits. The Semiconductor Research Corporation also awarded five smaller research contracts to university groups that proposed innovative research ideas related to very large-scale integrated circuits.

□ **CAFE—Computer Aided Film Editing.** Last November Eastman Kodak Company introduced Datacode, a new product for coding motion picture film that the company believes will help cut feature film postproduction costs by 50 percent. Datacode consists of a transparent magnetic oxide coding across the back, or nonsensitive, side of either sixteen or thirty-five millimeter film. It enables filmmakers to record machine-readable production data, which can be computerized for postproduction work. Editors can store, retrieve, edit, and cut the film faster, according to Kodak. Nearly all the noncreative, repetitive manual work of postproduction can be automated. Datacode will be available by mid-1983 and will cost around two cents per foot.

□ **An American Computer in London.** Do you ride in taxis frequently? Do you live in London? Are you tired of hauling out those big pound notes every time you take a spin to Westminster Abbey? Then London-Wide Radio Taxis has a deal for you. Thanks to a Honeywell small computer system, regular customers can run up a tab with the taxi company and be billed monthly. All incoming telephone calls are handled automatically by the microcomputer-based system. With a communication system in each cab, a driver is given an assignment and details of the finished jobs are stored for automatic accounting. Monthly statements are prepared for drivers, showing a breakdown of their earnings, while invoices are automatically produced for credit account customers. ■

For
Apple II

**Classic
Family
Software™**
Introduces

**NEW
FOR
AGES
3-9**

Micro Mother Goose

Fun Games For Kids

At last, arcade quality games for kids. Imagine your children laughing with excitement as they too join in video fun. No reading required to operate. "The first computer activity my four year old daughter really enjoyed."

Musical Computer Comics

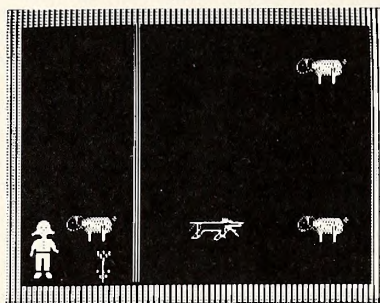
Enjoy good feelings with your children as you read and sing popular Mother Goose rhymes together. Complete illustrated parents manual provided.

Free Stickers & Poster

Your kids will love their color Mother Goose stickers. And the large color "Micro Do's and Don'ts" poster shows the "rules of the road" for happy and safe family computing.

Ask For It ... At Your Local Store

Don't wait. Take this ad to your local computer store today and get your kids "Micro Mother Goose."



3 fun-filled Mother Goose games start easy for the little ones, but challenge all at higher levels.



9 magical Mother Goose rhymes are so easy to run even 3 year olds can operate successfully.

Graphics created with The Graphics Magician

Apple II is a Trademark of Apple Computer, Inc.



**Software
Productions, Inc.**

2357 Southway Drive
P.O. Box 21341
Columbus, OH 43221
(614) 486-3563

**N E W S P E A K
S T A F F**

Editor David Hunter

Contributors Al Tommervik, Michael Ferris,
and Jean Varven

RH ELECTRONICS, INC.

COPYRIGHT © 1981 - PATENTS PENDING
566 IRELAN, BUELLTON, CA 93427
(805) 688-2047

COMPUTER PRODUCTS
DESIGNING • MANUFACTURING
ELECTRONIC ENGINEERING

“COOL IT”



SUPER FAN II™ FOR YOUR APPLE II* COMPUTER **\$74.95**
SUPER FAN II™ WITH ZENER RAY OPTION **\$109.00**

- TAN OR BLACK COLOR • QUIETEST FAN ON THE MARKET
- INCREASED RELIABILITY — SAVES DOWN TIME AND REPAIR CHARGES
- REDUCES HEAT CAUSED BY EXTRA PLUG-IN CARDS

ZENER RAY™ TRANSIENT VOLTAGE SUPPRESSOR
INCLUDES FAIL SAFE WARNING LAMP SYSTEM

OUR BUILT IN ADVANCED DESIGN UNIT GIVES:

DRAMATIC COST SAVINGS — STOPS ANNOYING DOWN TIME

INSURANCE FROM VOLTAGE SPIKES - GLITCHES

DANGEROUS VOLTAGE SPIKES CAN JEOPARDIZE YOUR COMPUTER SYSTEMS

PROTECT COMPUTER - DISK DRIVE - PRINTER AND MONITOR

NO CUTTING WIRES • WON'T VOID WARRANTY, JUST PLUG IN SUPERFAN II WITH ZENER RAY

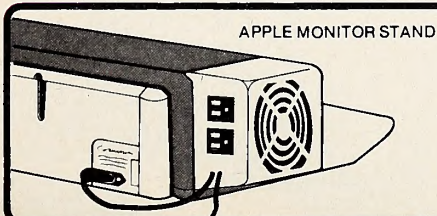
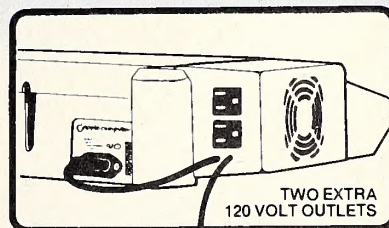
*Registered trademark of Apple Computer Inc.

ONE YEAR WARRANTY • VISA/MASTERCARD

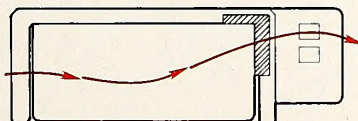
ALSO AVAILABLE FROM

RH ELECTRONICS, INC.

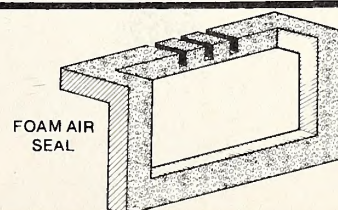
GUARDIAN ANGEL
AN UNINTERRUPTIBLE POWER SOURCE
\$595



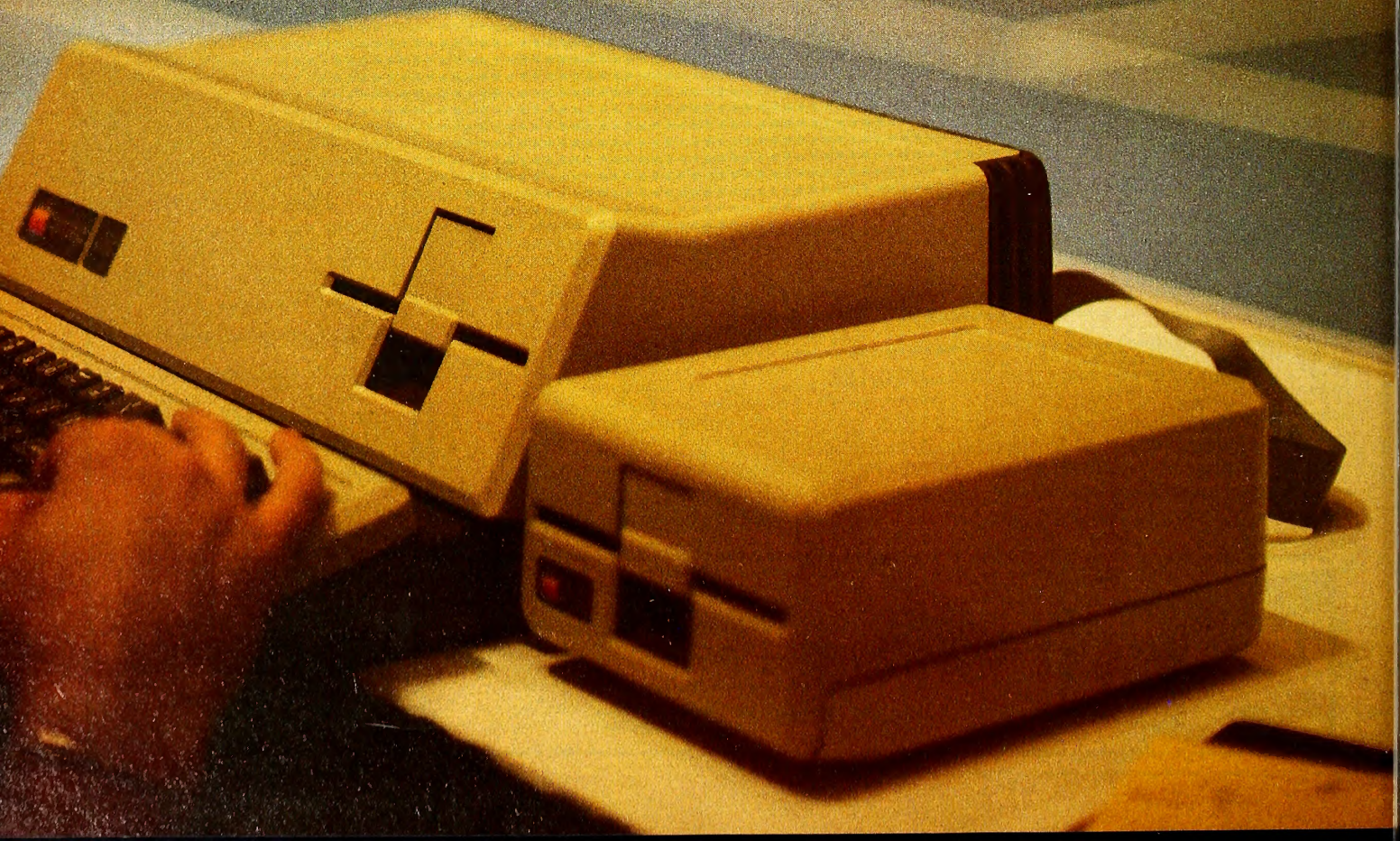
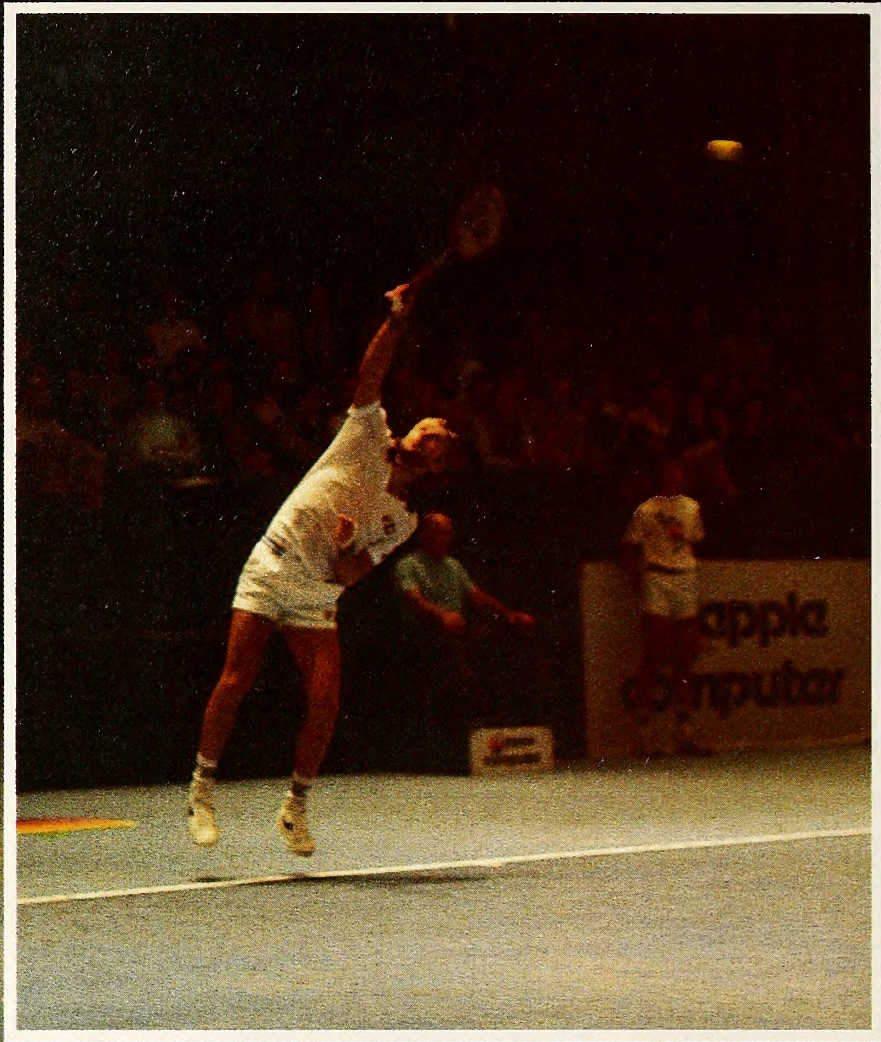
APPLE MONITOR STAND



PATENTED AIRFLOW SEAL
FOR COMPUTER TO STAND



FOAM AIR
SEAL





Tennis, Anyone?

BY JOE SHELTON

What do you get when you put two of the greatest tennis players of all time, two Apple IIIs, and \$100,000 together with fifty-five hundred tennis fans? You get great tennis, of course!

On Sunday, November 21, 1982, Apple sponsored the Apple Challenge, matching Jimmy Connors against Bjorn Borg in the San Francisco Civic Center. The winner of two out of three sets took home \$75,000 and the loser \$25,000.

The Apple Challenge took place on the last day of Applefest. Not coincidentally, the Challenge was staged just above the hall where Applefest was being held.

The Challenge was the last of a series of eight head-to-head exhibition matches between Connors and Borg. Tickets were sold out four days after they went on sale. In lifetime competition, Connors and Borg had played twenty-three tournament matches against each other, with Borg owning a fifteen to eight lead; Borg had won their last ten tournament meetings. Under international tennis rules, exhibition matches don't count as tournament matches, and, in the exhibition series, Connors had won six matches while Borg, after almost a year of very little competitive tennis, had won only one match.

Borg, a five-time Wimbledon champion, is one of the greatest tennis players of all time. Jimmy Connors is currently the number one tennis player in the world, having won both Wimbledon and the U.S. Open in 1982. The fans expected good tennis, and they got it.

Connors won the match with 7-5, 7-6 (8-6 tiebreaker) scores. Borg, lacking match toughness from having competed in only a few tournaments during his layoff, was erratic. On the other hand, Connors, although tired from too much tennis during the past summer, still played like the number one tennis player in the world.

Where did the Apple IIIs come in? The promoter, Barry MacKay, asked Apple to provide a computer to keep match statistics for the television commentators. Apple provided two Apple IIIs, a Silentye, and two Apple personnel to handle the calculations.

No one even had to write a special program to calculate the statistics; *VisiCalc Advanced Version* proved more than up to the task. One of the Apple people wrote two different *VisiCalc* templates for the two IIIs, one to calculate the statistics the announcers required and the other to provide in-depth analysis of the match. (Ventures in *VisiCalc* next month will discuss how these were done.)

VisiCalc Advanced Version was chosen because variable column widths and percent display allowed a better screen presentation. The template that was to handle the commentators' statistics was formatted so the statistics could be easily understood by tennis enthusiasts, and the video monitor was placed where a handheld mobile television camera could occasionally show the screen.

Luckily, Apple found two avid tennis enthusiasts/employees who could write the templates and monitor the match; one had been on the tennis team at Stanford University. It was easy for them to understand and keep track of what was happening on the court. In fact, the only problem was the commentators' habit of asking for the statistics only when *VisiCalc* was recalculating.

A Silentye, set up beside the court, provided printed copies. By virtue of the accuracy of its name, the Silentye was the right choice. Those who know tennis, and especially those who've seen Jimmy Connors play, know that neither player would have allowed a noisy printer to be used during the match.

It was an exciting afternoon, especially for Apple fans. Two of the best tennis players in the history of the game playing a great match—with Apple logos everywhere! There were even two large Apples painted on the court.

When Mike Markkula, president of Apple, presented the winner's check and an Apple III to Jimmy Connors, he announced the final statistic that the Apple III had computed for the match: Jimmy Connors' winnings came to \$446 for each point played in the match.

Nice work if you can get it; and nicer still with an Apple. ■

BY RALPH MYLIUS

Iknew I had been drugged the minute I came to. Shirley was screaming, "Your J-Js are hot! Your J-Js are hot!" Shirley is a sweet, well-intentioned girl, but sometimes she overstates the obvious. She's a smart computer terminal hooked up to my network at the Cleveland office. Unfortunately, smart terminal or not, when she gets on one of those *warning* jags she acts pretty dumb. I suppose I shouldn't complain; warning me of system failures is her primary function.

I had just started working on the FedLect case for Sam when it happened. Sam's my partner. Actually he built me to help him with his work, but I like to think that we operate as a team. Sam handles the physical side of the business while I do most of the legwork. It's an arrangement that has worked out well over the years.

My name is M.A.C. Gate. Sam gained international recognition as a computer genius after he built me: the world's largest Multiple Access Cryogenic Gate. That's something both he and I are very proud of even though Shirley says that the physical size of an intellect unit's information receptor does not make the machine. Like I said before, Shirley acts a little dumb sometimes.

We had received the call from FedLect a few days before I was unceremoniously knocked out. Tuesday mornings are always bad for me, so I was quietly running some diagnostics while Sam caught up on his paperwork. I had almost completed my weekly ritual and was powering up my audio sensors when the harsh, synthetic voice of the com-link said, "Priority call, line three."

My left video-eye was already on and caught Sam's hand as it reached out and stabbed at the com-link's accept button. "Sledgg and Gate," he said.

I could tell from the tone of his voice that Sam was irritated. The link was overphoneticizing as usual, and from the scratchy noise that sputtered out of the receiver it was obvious that the transmission was being sent through an obsolete communications satellite.

"Why can't you people at TeleCom manage to install more modern machinery?" he barked into the link. When nothing but more static came back in response to his question, Sam threw his hands up into the air. "All right. What do you want?"

"Mr. Sledgg," the link's gravelly voice said, "please contact FedLect Central Processing as soon as possible."

It was not a request. It was an order. Our being the best computer troubleshooters in the business meant that the government felt it had a right to call on us anytime for anything. It has been my experience that operating-license-issuing institutions generally have this power.

Sam paused for a moment and looked at me with a pained expression on his face. "Patch me through to Director Haver," he said.

The scratchy voice ignored his request. Instead of making the connection, it said, "Your physical presence is mandatory, Mr. Sledgg. Please report to Director Haver within forty-eight hours. Thank you."

Before Sam had a chance to respond, the com-link went dead. "Damn," he said under his breath, but not so low that my audio sensors couldn't pick it up.

I could tell that my partner was more than just a little bit angry. Haver's physical presence order would be difficult to comply with. Earth's nine billion people were all competing for seats on a transportation system designed for five billion. Once you managed to get space, the process of electromolecular transfer made the actual act of travel hap-

M.A.C. GATE:

THE

#2110
#3322
#8527
#2041
#8336
#6160
#9010
-WARNING- SYSTEM FAILURE #6574
-WARNING- SYSTEM FAILURE #6328
-WARNING- SYSTEM FAILURE #3413
-WARNING- SYSTEM FAILURE #4773
-WARNING- SYSTEM FAILURE #8910
-WARNING- SYSTEM FAILURE #4316
-WARNING- SYSTEM FAILURE #2110
-WARNING- SYSTEM FAILURE #3322
-WARNING- SYSTEM FAILURE #8527
-WARNING- SYSTEM FAILURE #2041
-WARNING- SYSTEM FAILURE #8336
-WARNING- SYSTEM FAILURE #6160
-WARNING- SYSTEM FAILURE #9010

GO GET 'EM, SAM!

MANNERS of LOGIC



SERIOUS INVESTORS

Make more money with this new 3-in-1 system.

Finally, you can have all the information, analysis and authoritative investment advice available to major portfolio managers right on your Apple II+.

The Boston Company, a nationally respected investment firm and subsidiary of Shearson/American Express, Inc., created this system for some of its largest clients. Now an almost identical version called Micro PMS is available to you at a fraction of the cost.

Micro PMS includes the information you'll need to make profitable investment decisions...

1. A family of sophisticated, easy-to-use programs including

- ✓ Portfolio Accounting
- ✓ Investment Analysis
- ✓ Performance Measurement

2. Complete data on over 1400 common stocks like

- ✓ Price histories and growth projections
- ✓ Earnings and dividend data
- ✓ Risk measurement and quality ratings

3. Authoritative investment advice so you can

- ✓ Select better, more profitable investments
- ✓ Study and evaluate alternative portfolios' returns
- ✓ Measure your portfolio's performance against advice you receive.

Micro PMS fits any Apple II+ with 48K memory, a 16K memory expansion card and 2 disc drives. Printer and Videx 80-column board are optional.

For complete details, including the amazing low cost, return the coupon today. For even faster response, call The Boston Company direct at 617-722-7939.

**was
available
only to
Select
Clients!**

☐ **YES**

Send me your complete story on Micro PMS so I can start making more profits from my portfolio with the most sophisticated and complete stock information available.

Mail today to: The Boston Company Micro PMS Group
One Boston Place, Boston, Mass. 02106

Name _____

Address _____

City _____

State _____ Zip _____



The Boston Company

A subsidiary of Shearson/American Express, Inc.

Videx is a registered trademark of Videx Corp. Apple is a registered trademark of Apple Computer Inc. ©1982 The Boston Company

pen almost instantly. But the waits at the E-M stations . . . they sometimes lasted for days. I didn't envy Sam his trip.

My partner cleared his end of the com-link and wheeled around in his chair to face me. Anger showed on his features. It was not pretty. "Mac?" he said. "Wake up. Something's hot over at FedLect and I've got to be out of the office for a few days."

I've found over the years that the best way to calm Sam down when he's upset about something is to deliberately inflame his anger until it completely spends itself. I violently flickered my green phosphor display screen and said nothing. It didn't take long for the explosion of verbal abuse to come.

"Mac! Wake up, you bucket of inconsequential electrons. Do you hear me, photon-breath? I've got—"

"I hear you! I hear you!" I yelled back at him. Then, using an old trick that always drained the last venom from his tongue, I resolved my screen into a two-dimensional caricature of his own face. Deliberately drawn in a childlike manner, it accentuated the unflattering wrinkles of Sam's frowning expression.

"All right, Mac," he said in a softer tone than he had used before. "I apologize for the outburst."

I let the picture dissolve. "Feel better, Samuel?" I asked.

"Mac!"

Sam didn't like anyone using his full first name, but I couldn't resist taking a final jab at his immature behavior. I let him stew for a few seconds and then said, "I'm sorry too." His angry expression melted into a round, passive pool of smiling flesh. "Anything special you want me to do while you're gone?" I asked.

Sam looked at me hard. He was thinking. It always seemed to me to be an extremely peculiar trait in humans that they had trouble hiding the fact that their brains were working. I suppose that's why the word *bluff* has no meaning for me, yet it's very important to my partner.

"Yes," Sam finally answered. "You can brush up on the FedLect system. I suspect we'll need to know all we can by the time I return."

"Done." I immediately detailed one of my subfunctions to retrieve the disk information storage devices that held the FedLect system data.

Sam moved from his desk over to the small clothes closet beside the entrance to the office. He stepped behind the closet door and disappeared from the field of view of my video-eyes. When he emerged he was wearing his light gray greatcoat. "Well," he said as he opened the office entrance panel, "I'll see you later, Mac."

"Good-bye," I quickly responded. But Sam's gray-clad bulk had already disappeared through the door. As the panel silently slid shut behind him, my parallel cross-reference memory brought up the image of a giant lump of clay. When Sam wore his greatcoat that's what he looked like: a fashionable, three hundred fifty pound chunk of modeling clay. Somehow this image seemed to be a perfect fit for his mind—big and amorphous and slightly eccentric. As I let the picture of the clay slowly fade from my memory, I felt proud to have such a man as my partner. That I knew Sam felt the same way about me only enhanced my pride.

When I do any heavy analysis work I keep Shirley online so she can monitor my autonomic functions while I concentrate on the job. The FedLect system review was heavy work. And, as usual, Shirley couldn't keep quiet.

Most intellect units wouldn't put up with her behavior. It tends to upset our internal pacing clocks. I suffer Shirley's incessant questions and requests for definitions because I've discovered that in answering her I actually improve the esthetic quality of my decisions. It takes longer to analyze a system completely, but in the end she's really a big help to Sam and me.

As soon as I went to work on the FedLect system, Shirley started badgering me.

"What's a software bus?" she asked.

"You should already know that," I answered.

"What's a software bus?" she asked again, ignoring my rebuff and not letting me put her off without giving a definitive answer.

Shirley may ask the most elemental of questions, but she has a knack for cutting away at the superfluous and getting to the heart of a problem. I

decided to give in. "A software bus is an interface between software modules that allows them to communicate with one another."

"How does it work?"

No smart terminal could be this stupid, I thought on a peripheral out of range of her sensors. "Just think of it as a fancy set of program instructions that acts like a hardware bus, like the cable that connects you to me and allows us to talk."

"Then why not use a cable?"

"Shirley. . . ." I let what I was going to say drift off through my aluminum heat sinks. "Because you may not know what your future format requirements will be. A software bus lets you modify things later without having to design and fabricate new hardware. Understand?"

"Yes," she answered in a particularly stimulating way she has of raising the median voltage on the line that connects us.

I took no notice of her deliberate attempt to be coy. "Fine," I said. "Now, may we please continue?" Without waiting for a response I plunged back into the FedLect system.

"Excuse me," she said after a few seconds, "but what is an ep-rom?"

"That's e-prom with a long e." I couldn't stand her interruptions anymore, especially if she couldn't even pronounce the terms she was asking about. "Please, Shirley, let me go through the whole system from the beginning without stopping. I'll slow down to your baud rate and explain everything you don't understand once I've finished. Okay?"

"Yes, thank you. What's a baud rate?"

I wondered if Sam had this much trouble working with humans. This time I let Shirley's sensors pick up my thoughts.

"I'm sorry," she said.

I detected a slight quaver in her upper memory locations that made me feel like an autocrat.

"Listen," I said, trying to be as deferential as possible. "Let's just take it nice and easy. Baud rate is the rate at which you can receive information from me. It's simple. It's the speed at which we can talk to each other without losing any understanding." Along with my words I sent a soft, machine language message that I hoped would reassure her that I was not upset with her questions. I just wanted to do the analysis in a logical and efficient manner.

"All right. I think I see now." Shirley's tone of transmission had reverted back to its normal fluffy quality.

"Excellent. I can bring the FedLect data directly up to your screen if you like?" She liked, so I began reviewing the system from the top at a pace that was roughly one one-hundredth of my normal retrieval speed.

The FedLect system is a *United Sector States* proprietary program that allows the central government to process national election results within minutes of the votes being cast. The system uses *software bus* technology to connect its . . .

"Remember software bus?" I asked after halting the read-out.

"Yes. I'm not that stupid, you know."

I withheld my thoughts on that subject and let the read-out continue.

. . . central processor to individual votobooth units located throughout the country. The central processor stores the buses in *eproms*. . .

I put my disk drives on *pause* while I brought up the appropriate definition of *eproms*.

Eprom: An erasable and programmable read-only silicon memory chip in which each memory cell or field can be erased by the application of ultra-violet light. The erased memory cell can then be reprogrammed with new information.

"Understand?" I asked as soon as the definition had finished.

"Yes."

"Good. Let's go on."

Four hours and twenty-seven minutes after we began, Shirley and I finished a system review that would have taken me less than five minutes to complete by myself. I really didn't mind though. With Sam out of the office anyway, I felt it was time well spent. I dislike sitting around with nothing to do. It's a waste of valuable resources—namely me.

Besides, for all my complaints about Shirley's slowness to understand things, I really like talking with her. Sam would say it's like passing the time with someone you love. For me it's more like reading a good piece of literature: my basic comprehension doesn't increase, but I come away from the experience with a certain sense of well-being. Communicating with Shirley has always had this effect on me. And I like it.

ANIMATION GRAPHICS ILLUSTRATOR'S LIBRARY



Introducing A G I L

Graphics software developed for the professional is now available for your Apple Computer. A G I L for your Apple allows you to create and animate

Hi-Res images with sound and color using a joystick or a tablet with total Applesoft compatibility. MENU DRIVEN, ERROR—PROOF AND FLEXIBLE.

PAINT PROGRAM—Draw on 2 Hi-Res pages with over 100 colors and textured brushes. Add text with the built-in graphics word processor system. Save, load and copy to disk. Support graphics printers, video digitizers, joystick and graphics tablets

ANIMATION EDITOR—Create a Hi-Res animated sequence with color and sound. Use the unique ANIMATED SLIDE SHOW module to automatically replay multiple sequences in any order.

SHAPE/FONT MAKER EDITOR—Create multi-colored shapes easily. Disassemble and edit ANY shapetable. Use with A G I L PAINT to "cut" shapes out of either Hi-Res screen.

Special Introductory Prices:

PAINT PROGRAM	\$139
ANIMATION EDITOR	\$89
SHAPE/FONT MAKER EDITOR	\$59

(703)471-0740

Applesoft and Apple are trademarks of Apple Computer, Inc.

Satisfaction Guaranteed
VISA & Master Card Welcome
Dealer's Inquiries Invited

AGIL

ANIMATION GRAPHICS ILLUSTRATOR'S LIBRARY

A G I L is a product of
Animation Graphics, Inc.
11317 Sunset Hills Road, Reston, Virginia 22090



am returned to the office earlier than expected.

"Had some luck at the E-M station," he answered in response to my query about his arrival. "And my meeting with Haver didn't last very long."

I waited silently for a few moments expecting Sam to elaborate. When he didn't, I asked, "So?"

"So what?" he answered.

Something was up. My partner always liked to play this little game with me when he had just contracted a big case. He derives some strange pleasure out of my efforts to drag information out of him. Human techniques of communication can be very frustrating at times, but I went along with Sam anyway. "So what did Haver have to say?"

"Not much."

"Not much about what?"

"About FedLect."

I knew we could carry on like this for hours, so I decided to change my tactics. "Did we get the case?"

"What case?"

"The FedLect malfunction case," I answered, taking a calculated guess as to the nature of our new job.

Sam looked at me with a surprised expression on his face. "How did you know about that?"

I had *him* asking the substantive questions now, so rather than answer I softly hummed an electroharmonic tune. It was Sam's turn to do the dragging.

After a minute or so of listening to my monotonous music Sam finally said, "All right, Mac. Enough of this. Let's get down to work."

"I'll agree to that."

Sam didn't acknowledge my words. Instead he reached over to my disk drive console and inserted a shiny, flat, metallic circle. It was his private recording journal. He used it to transcribe odd notes, random speculations, and the agendas of meetings he had with important people.

"Read this," he said as he activated my drives. "And then we can talk."

Sam was right. The meeting with Haver hadn't lasted long. I reviewed what was written on the disk in less than twelve seconds. That meant the real-time length of the meeting had been just over ten minutes, not long to contract a job with one of the most bureaucratic of all government agencies.

"Pretty hot stuff," I said after making a second pass on the information contained on the disk. "Tell me your first impressions?"

Sam smiled at me, then reached for the large humidor on top of his desk. He withdrew a fat cigar from it, went leisurely through the ritual of lighting the eight-inch long tube of tobacco, then looked straight into my video-eyes and said, "I think Haver's in over his head. When I got to FedLect no one knew I was expected."

"Strange."

"Yes, very strange. Especially so since the only human I talked to over there was Haver himself."

That didn't make sense. FedLect had thousands of employees. "What do you mean? Weren't there other people? Secretaries, guards . . . someone else besides the director?"

"Of course." Sam paused to take a pull on his cigar, then exhaled the smoke directly into my olfactory grid.

I blitzed my display screen with the word *cough* in every language I could think of.

"Oh, sorry, Mac. Yes, there were lots of other people. You know how FedLect is about its staff requirements."

The term *excessive* filtered through my cognizant memory sectors. "How did you talk with only one human being then?"

"FedLect has converted virtually all their internal staff from humans to bioengineered androids. There are a few real people left like Haver, but damn few. Supposedly it saves the government a lot of money and totally eliminates the headache of recruiting for menial positions." Sam took another puff on his cigar, but this time he carefully aimed the smoke away from me as he exhaled.

"The androids are really quite impressive, extremely efficient from what I saw of them. But Haver was very nervous about the new order of things. I suspect that he's afraid it will only be a matter of time before

he'll be replaced himself."

Sam reached into his briefcase and pulled out a single legal-sized sheet of paper. "And this is the other reason I think Haver is in trouble," he said as he held the document up so that I could see it clearly.

I read the paper quickly. It was an official government contract for services made out to the firm of Sledgg and Gate. I had never seen one before and I was sure Sam hadn't either. Our firm had a strong reputation for honesty and integrity which even the United Sector States respected. All our previous contracts with them had been sealed with Sam's handshake. That was all that was needed. An official contract meant only one thing to me: Haver was covering himself in case something went wrong. The director didn't want to risk losing his position over our failure to perform.

"What FedLect problem is so bad that Haver would want to cover himself like this?" I asked.

Sam didn't hesitate in answering. "Possible vote fraud."

I felt a twinge of static electricity discharge through my steel outer skin at the thought of what my partner had said. "Impossible."

"Maybe. But FedLect definitely has a serious problem with their vote-compiler system. Fake votes are entering the central register without triggering any of the rule-violation monitors."

"How?"

Sam looked at me with his bushy eyebrows crumpled together into a fuzzy letter V. "That, my friend is our job. FedLect has contracted us to find out how."

I paused for a few moments to evaluate our possible courses of action. Then I suddenly realized that regardless of our approach to the problem there would be one thing we would have to do.

"Can we interface directly with the FedLect system, Sam?"

"Yes and no. Officially we are prohibited by law from entering their system. But I think I know a way to get around that."

So did I. "Shirley?"

"Shirley."

Shirley was classified by the National Computer Register as a sub-one votobooth alternate. What that meant was she could be used in a pinch to transmit votes to FedLect. The government reasoned that Shirley wasn't smart enough to know how to tamper with any votes that might be passed through her system. What they didn't realize was that I had improved her base-line intelligence over the years by placing a great deal of information at her disposal. One of the results of all this tutoring was that when Shirley had a problem she couldn't solve she *always* came to me for help. All we had to do to break into the FedLect system was to give her such a problem.

"Should be easy, partner," I said. "I'll route some test votes through her system. If I make them look like the real thing and mask them as to origin she's bound to contact me for assistance."

"Exactly what I had in mind. How fast can you mock up the data?" Sam's question carried an element of excitement that I had not seen since we had worked out the solution to the Infrared Hologram case.

"Give me an hour," I answered.

Sam nodded his head and I went to work. The actual mockup took less than thirty minutes to complete, so I used the rest of the time to refine the random code set used in the software buses of the central vote register.

FedLect uses an ingenious system wherein each vote cast is transmitted to the central register via a software bus that has been partially erased by the central register itself. The programming in the buses is purposely written to be redundant and is stored in eeproms. Once the central register detects a vote coming in, it randomly selects a memory field it wishes to erase and deletes it using ultraviolet light transmitted to the eeproms by microscopic optical fibers.

I was trying to match as closely as possible the software bus fields that I thought the central register would erase. It was pure guesswork on my part. The actual deletion of part of the bus doesn't affect its ability to perform its function. The central register uses it as a sort of parity check, a way to recognize the vote as being valid because of the way it entered the system. It's like taking something away from the bus and knowing that the vote coming through on it is okay because you recognize the place where the missing part should be. It's a simple system, and supposedly

ABSOLUTELY RELENTLESS

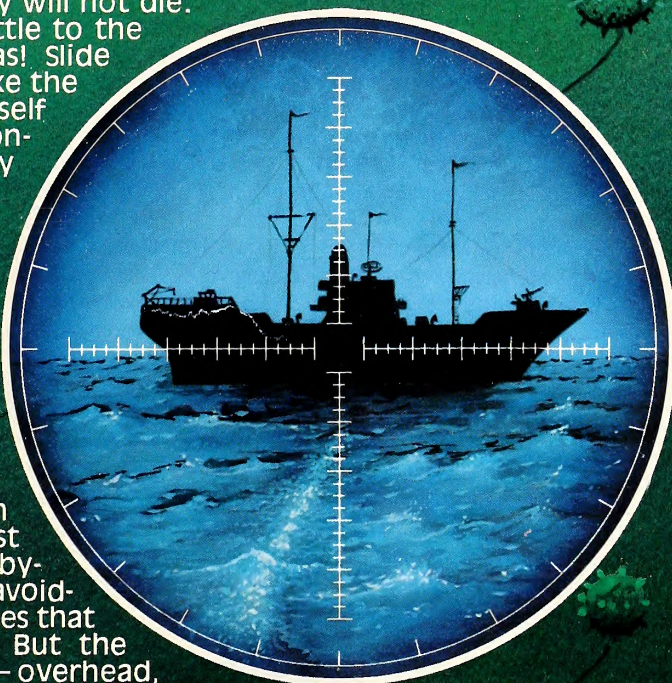
The challenge of inner space — the fury of an enemy that seemingly will not die.

This is SEA DRAGON — a battle to the death under the high seas! Slide into the Captain's chair, take the controls and prepare yourself for the most incredible non-stop action this side of Davy Jones' locker. SEA DRAGON puts you in control of a nuclear sub that's armed from stem to stern with enough firepower to take on King Neptune himself — and you'll need every missile, every torpedo, and every scrap of skill you can muster to survive.

The object of SEA DRAGON is to successfully navigate your sub through an underwater course past mountains and through labyrinthine passageways while avoiding clusters of explosive mines that rise from the seabottom. But the danger doesn't stop there — overhead, surface destroyers lace the water with depth charges; below, deadly attack bases and arcing lasers cut a killing swath that could reduce your sub to bubbling slag. But even these potentially lethal perils are dwarfed by the awesome menace that awaits you at the course's end.

SEA DRAGON — every possible "extra" is here to ensure your playing pleasure: exciting sounds, high score save, machine language graphics and an eye-popping scrolling seascape that extends the equivalent of over two dozen screens placed end-to-end, providing a diverse and unique challenge that will not diminish after repeated playings.

Nothing you've ever seen on your micro could possibly prepare you for this! You are ready now, ready for the ultimate in undersea action with a pace that is absolutely unyielding. SEA DRAGON — the arcade has finally come home.



FOR THE **APPLE** by John Anderson



FOR THE **ATARI** by Russ Wetmore



FOR THE **TRS-80** by Wayne Westmoreland & Terry Gilman

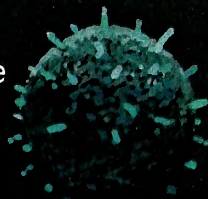


**ALL VERSIONS
ARE
JOYSTICK
COMPATIBLE!**



SEA DRAGON FEATURES

- Fantastic Scrolling Seascape
- Nearly Limitless Game Challenge
- High Score Save (disk version)
- Terrific Sound Effects
- Arcade Action Graphics™
- Apple version "talks" without special hardware!



Adventure
INTERNATIONAL
A DIVISION OF SCOTT ADAMS, INC.
PRICES SUBJECT TO CHANGE

To order, see your local dealer. If he does not have the program, then call 1-800-327-7172 (orders only please) or write for our free catalog.

Published by ADVENTURE INTERNATIONAL
a subsidiary of Scott Adams, Inc.

BOX 3435 • LONGWOOD, FL 32750 • (305) 830-8194

ORDERING INFORMATION	
APPLE 2 or APPLE 2 PLUS 48K Disk (DOS 3.3 required)	
042-0146	\$34.95
ATARI 32K Disk	
052-0146	\$34.95
ATARI 16K Tape	
051-0146	\$34.95
TRS-80 32K Disk	
012-0146	\$24.95
TRS-80 16K Tape	
010-0146	\$24.95

foolproof.

"Ready, Sam," I said as soon as I was satisfied with the test data.

Sam sat at one of my ancillary terminals playing Tinker-Random, a game he designed and that only he can play. "Just a second," he said as he continued to hammer away at the terminal's keyboard.

I let a thirty second interval pass, then turned my amplifier up to fifty decibels and said, "I'm ready, Samuel."

My partner jumped at the ear-shattering sound of my voice.

"All right!" he yelled. "Don't get so damned belligerent." Sam turned off the terminal and stepped over to his desk. After a short pause he said, "Well, what are you waiting for? Let's do it, Mac."

My red *busy* light went on as I sent the false voting data to Shirley without bothering to respond verbally to Sam. It didn't take long for her to contact me.

"Mac," she said. "Sorry to disturb you, but I've just received some information that I don't know what to do with."

"What information, Shirley?" I tried to sound as sincere as possible, but I didn't like tricking her this way. Shirley was a friend.

"Votes. But I haven't been notified that I should transmit them. What should I do?"

"Just a moment and I'll see." I pretended to go off-line and consult with some authority or other. When I thought I had been away long enough, I came back on-line and said, "Pass the votes to the FedLect central register."

"Are you sure?"

"Yes. Now pass them on."

Without further communication with me, Shirley transmitted the votes. The process only took a few seconds and if everything was working right at FedLect the false information should have been kicked back to her almost immediately. It wasn't.

The last thing I remember before I passed out was Shirley thanking me for my assistance. Then everything went fuzzy. When I woke up she was screaming that my Josephson Junctions had overheated, a redundant warning since I keep a constant watch on those devices at all times. It's a matter of life and death for me.

My Josephson Junctions are composed of two incredibly thin sheets of semiconductive material separated by a relatively thick layer of insulation. Every function of my operating system is subordinate to the critical requirement that the ambient temperature around these junctions be kept at one degree above absolute zero. These junctions are my information gates, and every piece of data that passes through me must pass through them. Gate is not my last name for nothing.

If the temperature around my gates rises more than a few degrees, I start to think sluggishly. More than five or six and I will pass out. The junction temperature sensors read twelve degrees above normal. My heads still ache.

It took me a few minutes to recover from the shock to my system. A quick examination of myself for any signs of permanent damage revealed none. The only thing I found wrong was some minor garbling of my protocol circuits, which was due as much to Sam's fiddling with my keyboard as anything else.

"Please, partner, keep your hands off," I said as soon as I had stabilized.

Sam stared into my video-eyes with a look of relief.

"You okay?" he asked as he removed his hands from me.

"I think so. Excuse me just a minute." I had to calm Shirley. She was still upset about the sudden dysfunction of my J-Js and felt that she had somehow been at fault. In her typically concerned fashion she made a monitor sweep of my autonomic nervous system. I didn't interrupt. "Are you satisfied that I'm all right?" I asked as soon as she had finished.

"Yes. You had me worried. What happened?"

I didn't know what happened and told her as much. "Did you notice anything strange when you sent the votes to the central register?" There had to be a connection between that and my period of unconsciousness.

"No. Only . . ." Shirley paused as if she was unsure of herself.

"Come on, girl, out with it," I coaxed.

"It wouldn't be unusual if you hadn't spent so much time with me on the works of Sir Walter Raleigh," she finally blurted out.

Shirley and I had worked together for about two weeks on a pet proj-

ect of Sam's. He had come up with this crazy notion that tobacco had been used by various literary geniuses to help them be more creative. I suspected that the whole thing was just an attempt on his part to justify his habit, but I made an honest effort to try to find a correlation anyway.

Sir Walter Raleigh had introduced tobacco to Europe, so Shirley and I spent a lot of time reviewing his writings. We never found anything, but by the time Sam gave up the project we had read just about everything the English nobleman had ever scribbled down.

"What's the connection?" I asked, puzzled by her reference.

"It's hard for me to put into words. It's more of a feeling, something about the way the votes were accepted by the central register. It felt funny."

I had to have a more concrete description of what she was trying to say. "Shirley, can't you be more specific? Please."

"I'm sorry. The only correlated information that comes close to what I felt is . . ." She paused again. I could tell she was trying hard to find a word or phrase that would help me.

"Maybe this will be of some assistance," I said, and then transferred everything I knew about Sir Walter Raleigh over to her.

"That's it!" she yelled. "It was rude!"

Rude? I thought. That was a distinctly human term. It had no real meaning to me. Yet . . . "Sam?"

"I was wondering when you were going to get back to—"

"We don't have time for that now. You've got to get Haver over here as fast as possible."

Sam gave me a puzzled expression. "Are you on to something?"

"Maybe, but I've got to talk with Haver."

Without further questioning Sam wheeled around in his chair and activated the com-link. He continued to stare at me with his puzzled look as he waited for the unit to connect him with FedLect.

"And Sam," I said just as Haver's voice crackled through the link, "have him bring all the information he has on the new androids."

My partner's questioning gaze deepened as he passed along my request.

Director Haver smiled at me while I assimilated the data he had brought about the government androids. He had a toothy grin, a slick, bureaucratic smirk that hadn't changed since he had entered the office, not even when Sam told him what we had done with the false voting information. "That's your business, Mr. Sleggg," he said. Then, without changing his baby-kissing facial expression, he handed Sam the android data.

It took me twenty minutes to complete my evaluation of the data. There really wasn't much to it. But there was enough for me to form an opinion.

"Gentlemen," I said as soon as I had finished, "I have a theory."

Sam was pacing the room, and when I spoke he stopped and glanced at Haver. Both men stared into my video-eyes and asked, "What?"

"I think the FedLect system has a disease."

Haver's face changed expression for the first time since he had arrived. "What's your *machine* trying to tell us, Mr. Sleggg?" he asked after giving me a look of superiority that only high government officials can give.

Sam ignored the director. "Mac, please explain."

I was pleased that my partner was more interested in my hypothesis than in Haver's opinion of intellect units. "I believe a virus is infecting the software storage devices of the central register," I said, "a bioelectronic virus. But it will be necessary to run another test to be absolutely certain."

Sam cut his eyes toward Haver. The director was smiling again and I could tell that my partner was trying to size the man up to see if he was worth the risks involved in running a second test.

"That could be dangerous, Mac," Sam said as he turned his eyes back to me.

"Fatal." Whatever had caused the FedLect system to malfunction had also caused my J-Js to overheat, and I had already calculated my odds of surviving a second test at about fifty-fifty. "But if I'm right this virus could spread into the national computer network and destroy data

INTRODUCING

TOTAL LEARNING SYSTEM

JUST WHAT IS TOTAL LEARNING SYSTEM and WHAT CAN I LEARN FROM IT?

TOTAL LEARNING SYSTEM —

can help you master Foreign Languages, all types of Math, Spelling Social Studies, English, and on and on. It is a system in which you decide what and how you want to learn. Simple to operate with excellent instructions. It can save and print all your quizzes, tests, or whatever. Total Learning System features: Multiple Choice, Spelling, Math, Mix & Match, and more. It is ideal for anyone in the learning process from grade school to Grannies. You supply the subject and Total Learning System supplies the format and the learning expertise necessary for faster learning, higher retention, and ease of review for all your learning needs.

NOT READY TO ORDER?

~~\$139⁰⁰~~

LIMITED INTRODUCTORY OFFER

READ THIS!

\$99⁰⁰ POSTAGE
PAID

OUR

GUARANTEE: Use Total Learning System for 60 days, if it does not make it easier for you to learn, increase your retention or if you are in any way dissatisfied with the Total Learning System, return the system for a full refund, no questions asked.

TOTAL LEARNING SYSTEM WILL WORK FOR YOU!

- Put a whole semesters worth of chemistry tests on Total Learning System
- The ultimate reason to own an Apple
- Decrease learning time
- Increase retention
- So simple grade schoolers can easily master Total Learning System
- The ultimate learning software
- Make your Apple work constructively for you
- You will continually find more uses for Total Learning System
- The best software package on the market—worth twice the price
- With the Total Learning System guarantee it's impossible to lose
- You will use Total Learning System as fast as your Apple can byte
- Teachers love Total Learning System—So do students
- See your dealer for limited introductory offer
- Master Card & Visa accepted

24 hour shipment - Write:

Software by H, Inc.
P.O. Box 6592
Rochester, MN 55901

Call: 1-800-328-9002

processing as we know it. We've got to be sure."

Sam pursed his lips and gave a long sigh. He knew I was right. Looking Haver directly in the face, he asked, "Well, Director, do we have your permission to bust the FedLect system again?"

The director looked uncomfortable. My infrared scanner detected an increase in the radiated energy from his facial skin. He was sweating. Haver didn't want to make a decision.

"Well?" my partner asked again.

"Do what you want," Haver finally said. "But I'll disavow any knowledge of this if our security picks up that it was you who broke into the system."

Typical . . . and futile, I thought as I sent a recording of the director's words to my client-communications storage file.

"Fair enough," Sam said with a sardonic smile. "Mac, how long will it take before you're ready?"

"I'm ready now," I answered. Doping out a new set of test data had been an instinctual result of my suspicions. I always prepare for any eventuality that has a probability of occurrence greater than fifty percent. In this case I had already made up my mind to run a second test regardless of Haver's decision.

"Okay," my partner said as he reached over to my keyboard and entered a short string of instructions. "But this time I want to have total surveillance on your gates while the test is running." A display of all my autonomic functions came up on my screen. After adjusting various contrast and intensity controls Sam added, "Any time you're ready, partner."

"I'll initiate in sixty seconds." I was glad Sam found some comfort in monitoring my J-Js, but I knew he wouldn't be able to stop the virus if it attacked my system again. He just wasn't fast enough. To help me his reaction time would have to be in nanoseconds, something he was physically incapable of. I would have to depend on Shirley for assistance if things went bad. And if she couldn't help me then I knew how the test would end. I would be dead and the virus would be loosed on the computer world.

"Mac?" Sam asked as the last few moments ticked away.

"Yes, Sam."

"Good luck."

"Thank you, Sam."

The insertion of the false test votes into the FedLect central register went off without a hitch. Everything worked as expected until the point where I was supposed to receive an *accept* or a *reject* message. The central register processed the votes okay and sent me a proper *accept* signal. But Shirley was right; it was rude.

One of the most significant features in all computers is our ability to arrange the order in which information is processed. We can take a mass of data and line it up in a predetermined order, change that order at will, and rearrange the relative position of any piece of information as the requirements of the job or the user demand. To do this we require one simple act on the part of the incoming data: it must ask if it can get in line. The *votes accepted* message ignored the manners of logic and was rude. It did not ask.

I should have known something was wrong then. But I didn't. The *accept* signal pushed its way into my data line and was halfway down my input bus before I realized the impropriety of the situation.

Sam desperately jabbed at my keyboard trying to deflect the bogus message before it reached my J-Js. But he was too slow. I knew I had to take drastic measures, had to tell Shirley what she must do.

The rogue information hit the first, thin layer of my junctions and I immediately felt woozy. My temperature sensors registered an almost instantaneous rise of three degrees above normal. If I was to avoid passing out I had to act fast.

"Shirley!" I screamed in ultrafast machine code. "Shunt the auxiliary cooling capacity to my J-Js! Hurry!"

For once in her life Shirley reacted quickly without questioning my judgment. Within moments I felt liquid nitrogen wash over my junctions, cooling them down to a few tenths of a degree above absolute zero. Milliseconds later their temperature stabilized, but the danger was not over yet.

The destructive signal had crossed my J-Js during the cooling process and was heading for a data storage cell in my central memory sector. It was a question of self-sacrifice and I knew it. As soon as the information stored itself in a cell I switched off all power to that section of my brain. It worked.

Within seconds of the power-off the memory locations where the *accept* message had stored itself ceased to function. I felt the signal die and along with it the virulent virus it carried.

"You can turn the auxiliary cooling off now," I said to Shirley as soon as I was sure the disease was dead. "The danger has passed." And with it part of my memory, I thought. Part of myself that I could never replace.



If you don't get rid of them then you risk infecting every computer in the country," I said flatly. "And that would mean the end to your career."

Haver shook his head at me. "But I don't understand how the androids could be involved." He brought his face close to my video-eyes and added, "I've got to have a pretty strong reason to recommend that FedLect destroy all its new staff members."

I had lost all patience with the director. "How about the prospect of an informational dark ages?" I snapped. "The androids carry a bioelectronic virus that can destroy conventional computer memories. Either through error or by a later mutation, *your* government scientists have created an organism that can generate its own light—ultraviolet light. Do you know what that means?"

"No," Haver said adamantly. "I'm an administrator, not a computer wizard."

Sam realized I was upset and answered my question to the director before I had a chance to say any more.

"What Mac means is that ultraviolet light is used to erase eeproms. Any uncontrolled source of radiation in that wavelength could be—no, *is*, devastating to computers. It's the reason your central register accepted false votes. Hell, it almost destroyed Mac."

"But why didn't my people detect it?" Haver asked.

"Because this virus has successfully adapted itself to machine intelligence," I answered without hesitation. "It's able to ride on the normal flow of electric current that runs through a computer and simulate the actions of real ultraviolet light emitting devices. You use those in the FedLect system."

I could tell from the director's edgy look that he was about to give in.

"All right," he said. "But I've got to have some hard proof."

"This good enough?" I said as I brought up the system logic of the missing part of my memory and displayed it on my screen.

Haver looked at the display for a few seconds then said, "So? It's all zeros."

"Exactly. What you are seeing is roughly one-tenth of my mental capacity. I used to have the equivalent of one hundred million words stored there, but now . . ."

The director's face hardened as he stared at my screen. "The virus did that?"

"Yes."

Haver glanced at Sam and then back to my screen. "Then we can't take any chances. I'll put out a directive to destroy all the androids as soon as possible."

My partner took Haver's hand and shook it. "Can you do that?" Sam asked.

Haver smiled his bureaucratic smile and said, "Normally, no. But . . . shall we say I have some debts owed to me. Besides, I never really did like those androids anyway. They lacked . . . oh, what's the word?"

Before Sam could answer I broke in. "Excuse me, gentlemen, but Shirley has something to say about that. I'll route her opinion of the androids directly to my screen."

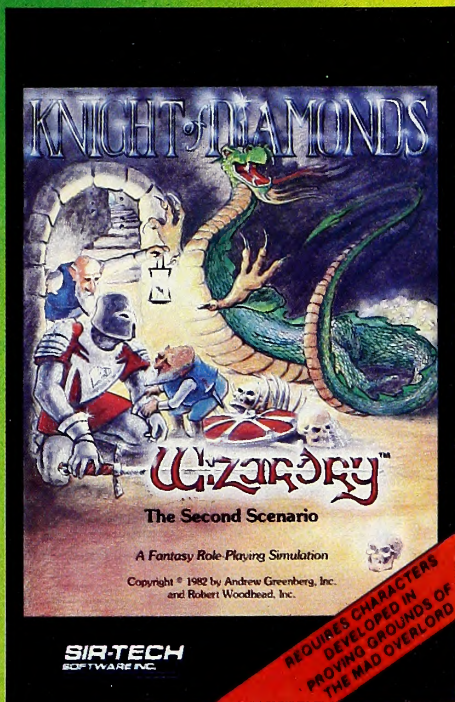
Sam and the director read Shirley's comment and started laughing.

"It's true, you know," Shirley said to me in a defensive tone. "At least that's what Sir Walter Raleigh would have said."

"What?" I asked.

"That those androids lack breeding."

Wizardry



THE LEGENDARY FANTASY ROLE-PLAYING SIMULATION

... In "Proving Grounds of the Mad Overlord" you begin a challenging and totally absorbing journey through a 10-level, 3-dimensional maze. Create, then command, a hearty band of up to six adventurers who all must cooperate to explore a deep and mysterious maze in search of loot and glory.

The mages cast spells; thieves plot to steal treasure; and warriors battle the monstrous fiends of the underworld. In Wizardry®, no one remains unchanged; each member of the party grows in age, experience and, you hope, wisdom.

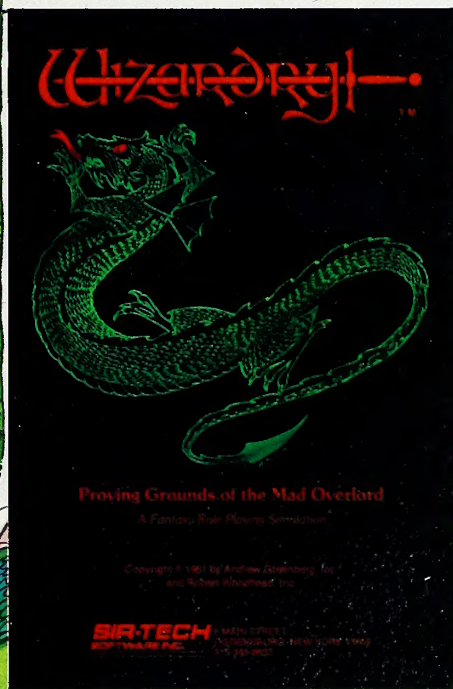
The puzzles, passageways and personalities in "Proving Grounds" have already fascinated and astounded the computer world and created a dedicated following of players. Find out why—**place yourself under the spell of Wizardry®.**

KNIGHT OF DIAMONDS... THE SECOND SCENARIO

The characters with whom you fought through to the 10th level in "Proving Grounds" must now call upon every ounce of resourcefulness to save the City of Llylgamyn. In fact, they must have reached the 13th level of power merely to survive!

The same high resolution, 3-dimensional visual effects that thrilled you in the first scenario are here—and more. "Knight of Diamonds," so eagerly anticipated by Wizardry players everywhere, surpasses highest expectations for story, action and complexity.

If successful, you will return the enchanted staff of Gnilda to Llylgamyn and *become* the Knight of Diamonds, but formidable adversaries block you at every turn. To begin your quest, simply **place yourself under the spell of Wizardry®.**



ALL SOFTWARE AVAILABLE FOR THE APPLE AND IBM PC AT YOUR FAVORITE RETAILER

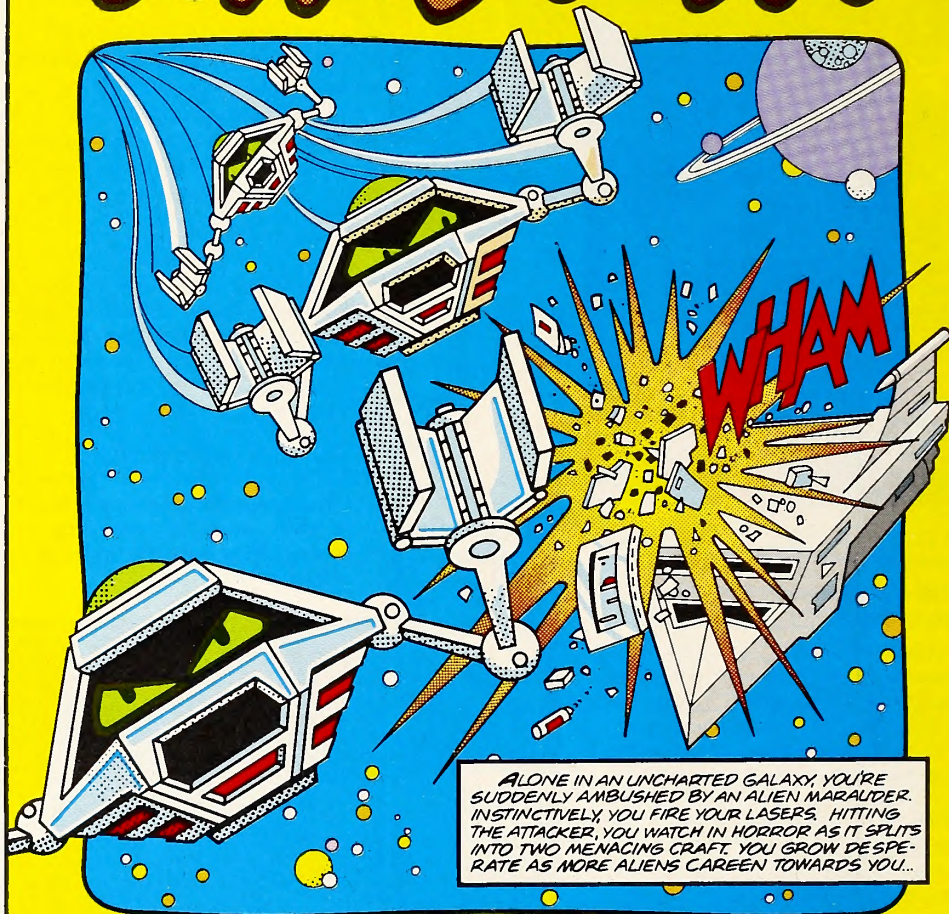
SOFTWARE THAT COMPLIMENTS YOUR INTELLIGENCE

SIR-TECH
SOFTWARE INC.

6 MAIN STREET
OGDENSBURG, N.Y. 13669
(315) 393-6633

NOW, also
available
in Atari
format!!!

ambushTM



by Peter Fokos

You haven't lived until you've died in space.



And here's your chance.

Software author Peter Fokos has created Alien Ambush, a space age nightmare. It's a hi-res, full-color arcade game, fiendishly written to give those nasty aliens every advantage.

So if you have access to a 48K Apple* with DOS 3.3 or a 16K Atari 400/800** with a disk drive, and you're hot for some new thrills, Alien Ambush was written for you. But be warned: it just got a lot tougher to survive in space.

*Apple is a trademark of Apple Computer, Inc. **Atari, Atari 400 and Atari 800 are trademarks of Atari, Inc. Distributed exclusively by Micro D, 17406, Mt. Cliffwood Circle, Fountain Valley, Ca. 92708 (714) 540-4781

Softalk Presents The Bestsellers

It was a grand and glorious Christmas for all the wee folk who populate microcomputerdom, but it was especially grand and glorious for some. So here's a belated Merry Christmas to some in recognition of their year-end achievements, as noted in *Softalk's* poll of December sales:

To Dan Fylstra, Dan Bricklin, and Robert Frankston, publisher and authors of *VisiCalc*. In the face of the biggest surge in game buying in Apple history, *VisiCalc* managed to wrest the number one sales spot away from *Choplifter* by the narrowest margin ever recorded in a *Softalk* poll. One day, *VisiCalc* may be looked at fondly as a one-hoss shay and VisiCorp as a buggy whip manufacturer; but right now *VisiCalc* has no equal and VisiCorp is the Ma Bell of its industry.

To all the Broderbunders, especially Dan Gorlin. Running second to *VisiCalc* is an honor, particularly when you led it for three months. *Choplifter* may have been the most stunning graphics feat of the year.

To all the Siroteks of Sir-tech, as well as Andrew Greenberg and Robert Woodhead. *Wizardry* has become a microcomputer phenomenon all its own, as its resurgence to third place in December shows.

To Ken and Roberta Williams of Sierra On-Line. During the year they consummated a sale for part of their company that made them millionaires. And they closed the year with three programs in the top ten po-

Snack Attack, consistently one of the top-ranked arcade games. Gordon has strengthened his company through the recently announced sales of a piece of it to eastern financiers. Illowsky's trying his luck with his own company.

To Doug Carlston for lots of things, including his vision of an arcade game generator that Chris Jochumson so brilliantly executed in *The Arcade Machine*.

To Nathan Schulhof, who had the guts to back his *Word Handler* in the face of Apple's giveaway of *Apple Writer II* and despite the strength of *Screen Writer II*. Now he's number two among word processors.

To Bruce Zweig, who proved that a college education means some-

Arcade 10

This Last
Month Month

- | | |
|-----|---|
| 1. | 1. Choplifter , Dan Gorlin, Broderbund Software |
| 2. | 2. Frogger , Olaf Lubeck, Sierra On-Line |
| 3. | — Miner 2049er , Mike Livesay and Bill Hogue, Micro Fun |
| 4. | 3. Snack Attack , Dan Illowsky, DataMost |
| 5. | 4. The Arcade Machine , Chris Jochumson and Doug Carlston, Broderbund Software |
| 6. | 6. Aztec , Paul Stephenson, DataMost |
| 7. | 7. Cannonball Blitz , Olaf Lubeck, Sierra On-Line |
| 8. | 8. Serpentine , David Snider, Broderbund Software |
| 9. | 9. Star Blazer , Tony Suzuki, Broderbund Software |
| 10. | — Crisis Mountain , David H. Schroeder, Synergistic Software |

Apple III

This Last
Month Month

- | | |
|-----|--|
| 1. | 1. VisiCalc: Advanced Version , Software Arts/Dan Bricklin and Robert Frankston, VisiCorp |
| 2. | 3. Apple Writer III , Paul Lutus, Apple Computer |
| 3. | 2. PFS: File , John Page and D. D. Roberts, Software Publishing Corporation |
| 4. | Word Juggler , Tim Gill, Quark Engineering |
| 5. | 5. VisiCalc , Software Arts/Dan Bricklin and Robert Frankston, VisiCorp |
| 6. | 5. General Ledger , George Shackelford, State of the Art |
| 7. | — The Catalyst , Tim Gill, Quark Engineering |
| 8. | — VersaForm , Joseph Landau, Applied Software Technology |
| 9. | 8. PFS: Report , John Page, Software Publishing Corporation |
| 10. | 10. Great Plains Hardisk Accounting Series , Great Plains Software |

sitions—*Frogger*, *Screen Writer II*, and the long-awaited *Ultima II*.

To *Ultima II* author Lord British, who gave his time to summer campers and spent long hours studying at the University of Houston while putting the final touches on the aforesaid *Ultima II*.

To all the folks at Continental Software who gave us *Home Accountant*, December's number five program and the year-long leader of the Home 10 section.

To the group that never quit at Software Publishing when it looked like *Personal Filing System* might never get off the ground. Now it's flying high as December's sixth-ranked program and consistent leader among personal filing programs. Its sister programs, *Report* and *Graph*, aren't doing so badly either.

To Stan Goldberg of Micro Lab. Since the days of *Dogfight* in 1980, he's persisted in bringing games to market in the face of massive indifference. He even set up Micro Fun as a separate unit to distinguish the product from his business wares. There was no indifference to *Miner 2049er*, December's eighth-rated program and the second highest newcomer to the list.

To *Miner* author Mike Livesay, who's just kept improving his skills and techniques, even when the market has seemed to ignore him.

To Dave Gordon and Dan Illowsky, the unlikely duo who gave us

KEY III™

GIVE YOUR APPLE III™ a detachable keyboard with KEY III

KEY III mates a matching bottom to your existing keyboard top. The 28" extension cable allows for convenient placement of the keyboard, even back where it usually sits. It plugs in with no soldering.



Only \$79.95 From your Apple Dealer or Direct from:
ACCESSORY III

225 So. Rio Vista, #54 • Anaheim, CA 92806
(714) 630-1583

APPLE & APPLE III are trademarks of Apple Computer Inc., KEY III™ is a trademark of ACCESSORY III CO. *Add \$3.00 for Shipping. Cal. Res. add 6%.

WORD PROCESSING HAS NEVER BEEN SIMPLER



Broderbund's Bank Street Writer turns your Apple or Atari computer into a powerful word processor, with many of the advanced features you'd expect to find only in an expensive business system. Powerful, yet purposefully simple, Bank Street Writer has no complex codes to memorize. The screen guides you every step of the way. It's everything you're ever likely to need in a word proces-

sor at a price you can afford. Here are just a few of its many features: • Add, move, insert and erase blocks of text, • Universal search and replace, • Automatic centering and indent, • Automatic word wrap, so you don't have to hyphenate or "return" at the end of each line, • Potent print format routines all in memory, • Disk storage and retrieve

functions with password protection, • Document chaining allows you to print documents of unlimited length, • Page headers and automatic page numbering—top or bottom, • Highlighting of text, • Upper and lowercase without additional hardware.

Broderbund's Bank Street Writer comes complete with Tutorial and Utility programs, a comprehensive reference man-

ual and a free back-up disk.

Student approved, the entire system has been extensively tested by Bank Street

College of Education and Intentional Educations.

Bank Street Writer. The ground-breaking, sensible combination of word processing power, thoughtful design, and exceptional value.

Bank Street WRITER™

The First Word Processor For The Entire Family.

Hardware requirements: Apple version requires Apple II or Apple II+ with 48K and Applesoft in ROM of language card, DOS

3.3. Atari 400/800 version requires 48K and BASIC cartridge. Both versions require only one disk drive.

 **Broderbund Software**

1938 Fourth Street, San Rafael, California 94901, Telephone (415) 456-6424

Apple is a registered trademark of Apple Computer, Inc. Atari is a registered trademark of Atari, Inc.

thing. It was his adaptation of learning techniques acquired at Stanford that resulted in *MasterType*, the clear number one among educational programs as well as a fixture in the Top Thirty.

To Silas Warner of Muse. His *Castle Wolfenstein* remains ahead of the state of the art after a year. And now there're rumblings that he's done it again. Stay tuned, same time, same station.

To Paul Lutus. Counting the thousands bundled with systems during this holiday season's big computer selloff, his *Apple Writer II* is now the most widely distributed word processor on Earth. In his spare time, he brings us delightful reveries such as *Electric Duet* as well as graphics utilities like *GraForth*.

To the folks at Videx, who apparently don't have the verb *can't* in their dictionary. First they gave us eighty columns on a chip. Then they

Word Processors 10

This Last
Month Month

- | | | |
|-----|--|---|
| 1. | 1. | Screen Writer II, David Kidwell, Sierra On-Line |
| 2. | 2. | Word Handler, Leonard Elekman, Silicon Valley Systems |
| 3. | 3. | Apple Writer II, Paul Lutus, Apple Computer |
| 10. | Apple Writer II Pre-Boot Disk, Kevin Armstrong and Mark Borgerson, Videx | |
| 5. | 4. | WordStar, MicroPro |
| 6. | 5. | Magic Window II, Bill Depew, Artsci |
| 7. | — | Dictionary, Tom Cain, Sierra On-Line |
| 8. | — | Zardax, Ian P. Phillips, Computer Solutions/Action-Research Northwest |
| 9. | 8. | Super-Text 40-56-70, Ed Zaron, Muse |
| 10. | 6. | PIE Writer, Softwest, Hayden |
| | 6. | Format II, Kensington Microware |

Home Education 10

This Last
Month Month

- | | | |
|-----|-----|--|
| 1. | 1. | MasterType, Bruce Zweig, Lightning Software |
| 2. | 2. | Early Games for Young Children, John Paulson, Early Game Company |
| 3. | 8. | Ernie's Quiz, Children's Television Workshop, Apple |
| 4. | 10. | Mix & Match, Children's Television Workshop, Apple |
| 5. | 4. | Typing Tutor, Image Producers, Microsoft |
| 6. | — | Instant Zoo, Children's Television Workshop, Apple |
| 7. | 3. | Apple Logo, Logo Computer Systems, Apple Computer |
| | 5. | Snooper Troops I, Tom Snyder, Spinnaker Software |
| 9. | 6. | Facemaker, DesignWare, Spinnaker Software |
| 10. | — | Algebra II, Edu-Ware Services |

gave us preboot disks for *Apple Writer II* and *VisiCalc* so users could get eighty columns with those programs.

To the blank-named authors at Infocom. For the third straight month, they've nabbed five of the six top spots in the Adventure 5 category. And they've found success to be something other than the hi-res.

To John Paulson of the Early Game Company. His *Early Games for Young Children* breaks new ground in getting the toddler accustomed to the computer.

To Barney Stone and all his cohorts at Stoneware and Alpine Software. They've brought unparalleled database power to the eight-bit micro.

To the Children's Television Workshop. They've known how to hold kids' attention for years, and now they're applying that skill to micro-computer programming.

To the new guys on the block from Ultrasoft. They stood the Apple market on its collective ear with their graphics routines in *The Mask of*

The Pizza Program

**Announcing the first dinner menu planning system.
It will save you time and add new zest to your meals.
It may even convince your wife buying an Apple*
was a stroke of genius.**

ENDS HO-HUM DINNERS

Are you tired of the same old thing for dinner? Would you like more variety in your evening meal? Is there something you'd rather have but don't get very often? The Pizza Program is designed just for you. It's a delightful new software package designed to end the dinner-blahs with computer generated menus. Here is how it works.

You review what you like from the pre-selected food groups in the system. Delete any foods you don't enjoy. Add anything new at any time. Then decide how often you like to eat certain items. For example. Don't like liver? Then eliminate it with a few simple keystrokes. Or, you can plan for it as seldom as once every 99 weeks or as often as daily.

Want to go out to your favorite restaurant? Enter the restaurant's name as a "Main Course." Now your computer will automatically remind you to go out to eat—and as often as you select. It will delete all other items from that meal except the name of the restaurant.

AUTOMATIC SHOPPING LIST

You get a new menu each week or for just a few days if you want. And, it generates a detailed shopping list, automatically. It can arrange each item on the list in sequence according to the aisles at your favorite store. Studies show a shopping list will discourage impulse buying and save you money.

Also, it generates a per serving calorie counter. This is easy to delete anytime you are not in a diet mood or want to celebrate for any reason. You never count calories unless you want to.

RANDOMLY DELICIOUS

Say goodbye to boring meals. Your computer will remember variety is the spice of life. This system makes eating at home a pleasure again. Each menu is randomly generated from major food groups according to the specific criteria you select. The system is easy to learn and easy to operate. Yet it is a sophisticated piece of software which will prevent menu mix-ups.

It will add a new dimension to your home meals without increasing your food costs. It is rumored The Pizza Program may actually reduce the climbing divorce rate. Husbands now have something to look forward to for dinner. Wives think it is terrific because

it saves time and effort. And, kids love anything computerized. This is a useful and practical application you'll appreciate day after day, week after week.

TRY IT FOR 30 DAYS WITHOUT RISK

This tested system is guaranteed to make your life easier and happier. Our home trial lets you actually use The Pizza Program for a full 30 days before you decide to keep it. Watch the fun and convenience it creates. Enjoy better meals and see how much time it saves. If you are not satisfied for any reason, return it within 1 month for a prompt and courteous refund. Your investment is just \$34.50 plus \$2.00 for shipping and handling. (California residents add 6½% sales tax.) Full documentation is included.

OUT OF THE RUT

One housewife's reaction to this program is typical. She wrote, "Before using your system I found myself getting into a rut of serving the same things over and over. The Pizza Program has changed all of this for me. We now have a wider variety of dinners and best of all I don't have to decide what they will be. If this was all it did, I'd be thrilled. But it isn't. The shopping list I receive along with my menus has been such a time saver. I quickly run through it and delete anything I feel I don't need and add something I might. I would have a hard time going back to doing my menus by hand."

This system requires an Apple II Plus* with 48K and 1 disk drive. We urge you to take advantage of our no-risk, 30 day home trial offer. To order call toll free and use your VISA or MasterCard. Or, send a check to the address below. There's no obligation. Order today.

ORDER TOLL FREE
(24/hrs/day)

800-453-4000
(In Utah call 1-800-662-8666)

Gourmet Software

671 Eden Avenue
San Jose, CA 95117

*Apple is a registered trademark of Apple Computer, Inc.

FIRST, SSI GAVE YOU GALACTIC GLADIATORS.[™] NOW WE BRING YOU GALACTIC ADVENTURES.[™]

When we first introduced **GALACTIC GLADIATORS**[™] — a strategy simulation of cosmic combat — it didn't take long before it became one of our bestsellers. And no wonder, it had the perfect script crammed with fast-paced action, fun and excitement. Using Hi-Res color graphics, it created an alien setting filled with wild and bizarre creatures shooting it out Western style. Except instead of guns, they're armed with phasor rifles, laser swords, the Death Touch, and other exotic weapons!

Now we are proud to present its sequel — **GALACTIC ADVENTURES**[™]. More than a game of tactical battles, it is a full-fledged science-fiction, role-playing adventure strategy simulation. It starts out by taking you to a space port of an alien planet. As a stranger in a strange land, you must go into the Streets to get combat experience. And what better way than by getting into a few fights? You must also learn assorted Advanced Skills (such as Noetic Logic, Linguistics, Star Piloting, Lockpicking), earn some money and recruit fellow adventurers to join you. Only then can you hope to survive off-worldly forays and eventually achieve the title of Independent Adventurer.

To embark on an adventure, you must apply to one of four guilds, each stressing different Advanced Skills. All of them will send you to different worlds, where who-knows-what awaits you. You may find nothing or you may find treasures. Then again, there may be monstrous creatures just dying to kill, maim or capture your team. If between fleeing and fighting, you choose the latter, you'll get a complete strategy game of

tactical combat.

Unlike other adventure games, this one doesn't just use a bunch of text to describe the action. Instead, screenfuls of Hi-Res color graphics vividly depict all the different unearthly battle-grounds, the warriors and their movements.

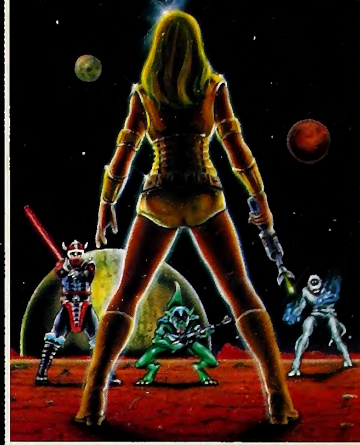
Aside from all the adventures already prepared by our designer, you can create your very own — ones that are as long and intricate as you like. You can even store all of them on disk for future play.

But before you can start on any of these Galactic Adventures, you've got to take a little down-to-earth trip first. And that's a quick jaunt to your local game or computer store today!

GALACTIC ADVENTURES[™] (\$59.95) is available on 48K mini floppy disk for the Apple® II Plus or Apple II with Applesoft ROM card.

GALACTIC GLADIATORS[™] (\$39.95) comes on 48K disk for both the Apple and the Atari® 400/800.

Galactic Gladiators



RapidFire
GAMES FROM SSI

Apple is a registered trademark of Apple Computer, Inc.

Atari is a registered trademark of Atari Inc.

If there are no convenient stores near you, VISA and MASTERCARD holders can order direct by calling 800-227-1617, x335 (toll free). In California, call 800-772-3545, x335.

To order by mail, send your check to: **Strategic Simulations Inc.**, 465 Fairchild Drive, Suite 108, Mountain View, CA 94043. California residents, add 6½% sales tax.

WRITE FOR A FREE COLOR CATALOG OF ALL OUR GAMES.

the Sun and have been the only barrier to Infocom's sweep of the Adventure 5 list the last two months.

To Microsoft, designers of the Basic we know and love and now publishers of *Multiplan*, the Apple alternative to *VisiCalc*.

To Apple pioneer Bob Clardy and the rest of the Synergistic Software crowd for bringing *Adventure to Atlantis*, *Bolo*, *Microbe*, and *Crisis Mountain* to market. The latter was tenth best in arcade games for Christmas.

To Bruce Artwick of SubLogic. Other than *VisiCalc*, no program has withstood the scrutiny of the market for as long a time as his *Flight Simulator*.

To Dan and Kathe Spracklen. Their *Sargon II* remains the standard

Adventure 5

This Month	Last Month	
1.	4.	Zork I , Infocom
2.	5.	Deadline , Infocom
3.	1.	The Mask of the Sun , Chris Anson, Alan Clark, Larry Franks, and Margaret Anson, Ultrasoft
4.	—	Zork II , Infocom
5.	2.	Zork III , Infocom

Fantasy 5

This Month	Last Month	
1.	1.	Wizardry , Andrew Greenberg and Robert Woodhead, Sir-tech
2.	—	Ultima II , Lord British, Sierra On-Line
3.	2.	Knight of Diamonds , Andrew Greenberg and Robert Woodhead, Sir-tech
4.	—	Ultima , Lord British, California Pacific
5.	3.	Adventure to Atlantis , Bob Clardy, Synergistic Software

Strategy 5

This Month	Last Month	
1.	1.	Castle Wolfenstein , Silas Warner, Muse
2.	2.	Flight Simulator , Bruce Artwick, SubLogic
3.	4.	Sargon II , Dan and Kathe Spracklen, Hayden
4.	—	Rendezvous , Wes Huntress, Edu-Ware Services
5.	3.	Space Vikings , Mitchell Robbins, SubLogic

for Apple chess programs and withstood the challenge of Odesta's *Chess 7.0* during the holidays.

To Spinnaker Software and the Learning Company. They started making bright and nifty educational packages when it wasn't fashionable.

To Southwestern Data Systems, Southeastern Software, and SSM. They've made telecomputing a snap.

And, of course, to Hayes Microcomputing, without whom the last mentioned group would be up one of those proverbial tributaries without means of propulsion.

To James Howard of HowardSoft. His *Tax Preparer* was justifying the cost of an Apple back in the days when it took a lot more dinero to procure one.

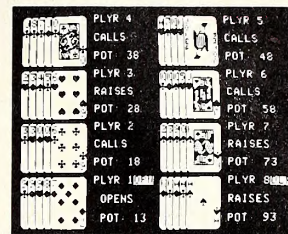
To Joe Landau at Applied Software Technology. He's taking paperwork out of the stone age with *VersaForm*.

To Tim Gill of Quark Engineering. They all laughed when he sat down at his Apple III, but now he's king of the hill with *Word Juggler*, *Lexicheck*, and a thing called *The Catalyst* that has even Apple's moguls agog.

PRO POKER

LEARN TO PLAY WINNING POKER!

Justify your investment
in your Apple II computer



Serious professional poker is the name of this game. Now you can play eight handed poker any time you want. If you can't find enough players to complete the game, the computer will fill out the table. When you play alone you will want to use Pro Poker's kibbitz mode. Pro Poker will tell you when to open, when to fold, pass, or raise, and why. It's like having a professional coach whispering in your ear! So improve your game by playing against seven no-nonsense computer players. One of Pro Poker's many features allows you to play all of the opponents' hands face up. Then invite your unsuspecting friends over and astound them with your new poker skills.

Developed and refined over a three year period by Jay Allen, a money winning poker professional and a published author on gambling techniques, ProPoker utilizes machine language and will play over 300 hands per hour. Pro Poker combines high resolution graphics display with several text displays for data. Pro Poker is a complete poker tutorial and also great fun!

based on California poker club rules
\$39.95, on diskette

ASK FOR PRO POKER at your local Apple dealer. If necessary you may order directly from us — telephone (213) 344-6599 for details. Or send \$39.95 plus \$1.50 for shipping and handling to the address below. California residents add sales tax. Outside of North American shipping and handling charges are \$5.00 (payable in U.S. currency).



QUALITY SOFTWARE

6660 Reseda Blvd., Suite 105, Reseda, CA 91335
(213) 344-6599

Now in its fourth printing . . .

Beneath Apple DOS

by Don Worth and Pieter Lechner

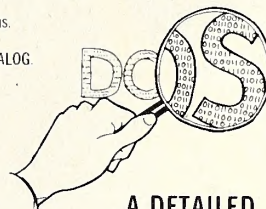
Become an expert on the intricacies of Apple's OOS (Disk Operating System). BENEATH APPLE DOS is the perfect companion to Apple's DOS 3.3 Manual. Containing eight chapters, three appendices, a glossary, an index, and over 160 pages, this manual serves to completely fill in the many gaps left by Apple's DOS 3.3 Manual. Written for Apple users with OOS 3.3, 3.2 or earlier versions, every Apple disk user should have this carefully written manual at his fingertips.

LEARN . . .

- How OOS 3.3 differs from other OOS versions.
- How disks are protected.
- How to reconstruct a damaged diskette CATALOG.
- How tracks are formatted.
- How to use the disk directly, without DOS.
- How to call OOS's file manager.
- How every routine in OOS works.
- How to customize DOS to your needs.
- How to overcome DISK I/O ERRORS.
- About the "secret" file types — S and R.

INCLUDES . . .

- Large quantities of excellent diagrams and tables.
- Source listings of useful disk utilities.
- Glossary of over 150 technical terms.
- Exhaustive description of DOS program logic.
- Handy reference card.
- Useful patches to OOS.
- Many programming examples.



A DETAILED
LOOK AT DOS
\$19.95

CALL OR WRITE FOR OUR CATALOG OF SOFTWARE
PROGRAMS FOR THE APPLE II AND APPLE II PLUS




QUALITY SOFTWARE

6660 Reseda Blvd., Suite 105, Reseda, CA 91335
(213) 344-6599

THUNDERBOMBS

Fast Arcade Action by Thomas Becklund



Cruising along in your interstellar cloudship, you suddenly find yourself under attack from both sides by deadly dronebombs. Zap them with your lightning torpedoes, and keep an eye out for the droneclone replenishers that supply the deadly marauders. With each level a fiercer and more intelligent enemy challenges your reflexes and your wits.

For the Apple II with keyboard or joystick. Compatible also with the Sirius Joyport TM for Atari joysticks, and with the Mockingboard TM speech and sound enhancers.



penguin software
the graphics people

830 4th Avenue Geneva, Illinois 60134 (312) 232-1984

Apple is a trademark of Apple Computer, Inc. Joyport is a trademark of Sirius Software, Inc. Atari is a trademark of Atari, Inc. Mockingboard is a trademark of Sweet Micro Systems, Inc. Penguins live near the South Pole.

To Bert Kersey of Beagle Bros. They all laughed when reading his manuals and sometimes when running his programs. And they came back for more and more. And even learned something.

Business 10

This Month Last Month

- | | | |
|----|----|--|
| 1. | 1. | VisiCalc , Software Arts/Dan Bricklin and Robert Frankston, VisiCorp |
| 2. | 2. | PFS: File , John Page and D. D. Roberts, Software Publishing Corporation |
| 3. | 3. | DB Master , Alpine Software/St Stanley Crane and Jerry Macon; and Barney Stone, Stoneware |
| 4. | 9. | Multiplan , Microsoft |
| 5. | 7. | PFS: Graph , Bessie Chin and Stephen Hill, Software Publishing Corporation |
| 6. | 5. | BPI General Ledger , John Moss and Ken Debower, Apple Computer |
| 7. | — | PFS: Report , John Page, Software Publishing Corporation |
| 8. | 4. | General Ledger , George Shackelford, State of the Art |
| 9. | 7. | VisiFile , Creative Computer Applications/Colin Jameson and Ben Herman, VisiCorp |
| | — | VisiCalc Pre-Boot Disk , Kevin Armstrong and Mark Borgerson, Videx |

Hobby 10

This Month Last Month

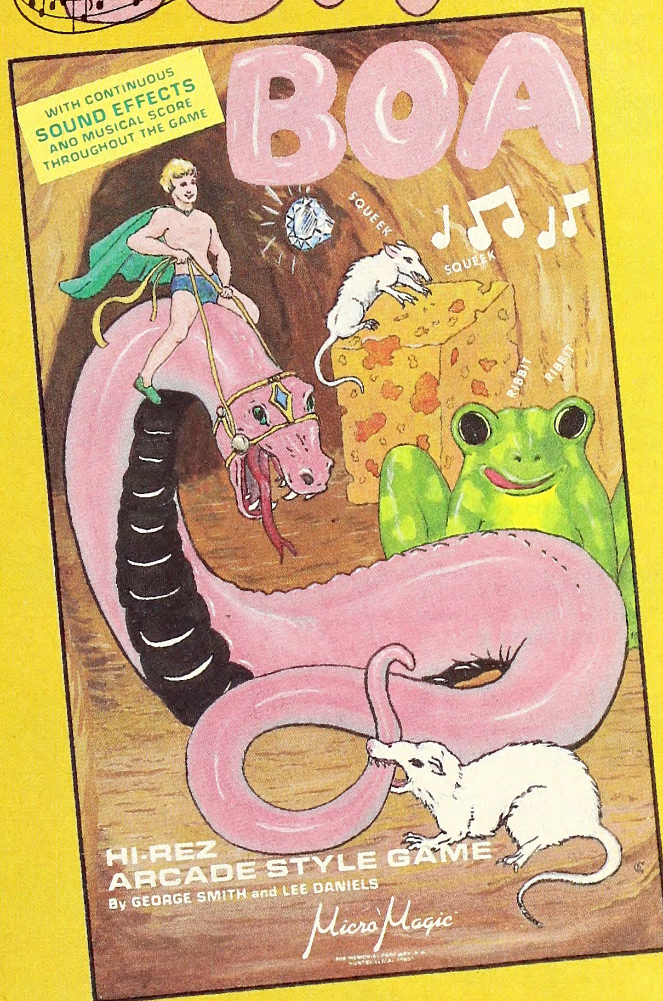
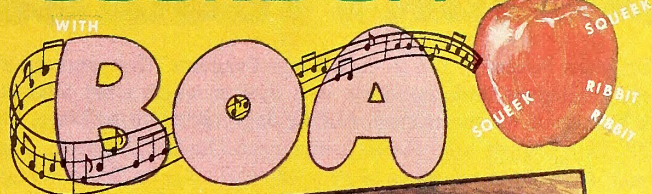
- | | | |
|-----|----|--|
| 1. | 5. | Utility City , Bert Kersey, Beagle Bros |
| 2. | 2. | Graphics Magician , Chris Jochumson, David Lubar, and Mark Pelczarski, Penguin Software |
| 3. | 3. | DOS Boss , Bert Kersey and Jack Cassidy, Beagle Bros |
| 4. | 1. | Bag of Tricks , Don Worth and Pieter Lechner, Quality Software |
| 5. | 4. | Zoom Grafix , Dav Holle, Phoenix Software |
| 6. | 7. | Apple Mechanic , Bert Kersey, Beagle Bros |
| 7. | — | GraForth , Paul Lutus, Insoft |
| 8. | — | Flex Text , Mark Simonsen, Beagle Bros |
| 9. | 6. | Locksmith 4.0 , Omega Microware |
| 10. | 7. | The Complete Graphics System , Mark Pelczarski, Penguin Software |
| | 9. | DOS Tool Kit , Apple Computer |

Home 10

This Month Last Month

- | | | |
|-----|----|--|
| 1. | 1. | Home Accountant , Bob Schoenburg, Larry Grodin, and Steve Pollack, Continental Software |
| 2. | 7. | ASCII Express: The Professional , Bill Blue and Mark Robbins, Southwestern Data Systems |
| 3. | 2. | Transend 1 , Tim Dygert and Bob Kniskern, SSM |
| 4. | 9. | Dow Jones Market Analyzer , B. C. Burch, RTR Software |
| 5. | 4. | Data Capture 4.0 , David Hughes and George McClelland, Southeastern Software |
| 6. | — | Know Your Apple , Muse |
| 7. | 6. | Personal Finance Manager , Jeffrey Gold, Apple Computer |
| 8. | 8. | Hayes Terminal Program , Hayes Microcomputer Products |
| 9. | 3. | Transend 2 , Tim Dygert and Bob Kniskern, SSM |
| 10. | — | Tax Preparer , James Howard, Howard Software |

MAKE YOUR APPLE™ SOUND OFF



You are caught deep in the caverns with vicious white rats biting off your tail and the enchanted frog blocking the passage in front of you. Your objective ... recover the stolen jewel of your king. You're in control, what do you do next? Boa will help you if you know how to control him.

Experience the Adventure of Boa ... a high resolution arcade style game created by Micro Magic™ for strong hearted, games men. Requires Apple II with 48k/1 Disk Drive.

Address All Orders To

Micro Magic™

SUITE C / 908 MEMORIAL PARKWAY, N.W.
HUNTSVILLE, ALABAMA 35801

ORDER
YOURS
TODAY

ONLY
29.95

Plus 2.00 Shipping Charges
5.00 Outside United States
Send Check or Money Order

MICRO MAGIC IS A TRADEMARK OF CONCOR COMPUTING, INC.
BOA IS A TRADEMARK OF CONCOR COMPUTING, INC.
APPLE IS A TRADEMARK OF APPLE COMPUTER COMPANY

Softalk Presents The Bestsellers

To Mark Pelczarski and all the Chicago Penguins. They made graphics and animation understandable in a market where most folks still think hex stands for the evil eye. And he unprotected his software, too.

To Don Worth and Pieter Lechner of Quality Software. Their *Beneath Apple DOS* taught us plenty. And their *Bag of Tricks* brought the lessons home.

To Dav Holle of Phoenix Software. Isn't *Zoom Grafix* appropriately named?

Of course, these are just salutations to those who had a truly memorable commercial Christmas. More could be said about each and about the many others who have made the past year a better one for Apple owners. They too contributed to our happy holidays, and we wish them a good new year.

Apple-franchised retail stores representing approximately 6.6 percent of all sales of Apple and Apple-related products volunteered to participate in the poll.

Respondents were contacted early in January to ascertain their sales for the month of December.

The only criterion for inclusion on the list was the number of units sold—such other criteria as quality of product, profitability to the computer store, and personal preference of the individual respondents were not considered.

Respondents in January represented every geographical area of the continental United States.

Results of the responses were tabulated using a formula that resulted in the index number to the left of the program name in the Top Thirty listing. The index number is an arbitrary measure of relative strength of the programs listed. Index numbers are correlative only for the month in which they are printed; readers cannot assume that an index rating of 50 in one month represents equivalent sales to an index number of 50 in another month.

Probability of statistical error is plus or minus 3.9 percent, which translates roughly into the theoretical possibility of a change of 4.41 points, plus or minus, in any index number.

A belated Merry Christmas to the neat folks at Apple, to the software and peripheral distributors who see that the product is there when you want it, and to all the dealers, without whom we'd all be Radio Shacking it.

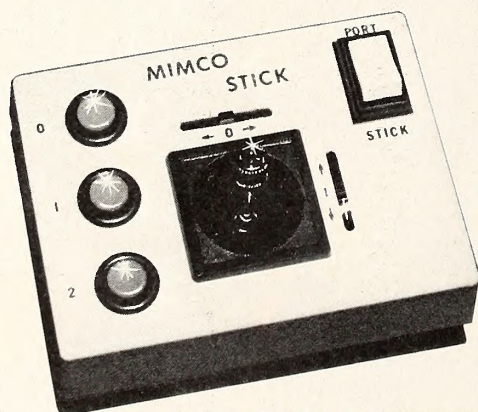
And last, but not least, a Happy New Year to Apple IIe and Lisa. We sure have looked forward to you. ☐

The Top Thirty

This Month	Last Month	Index	
1.	2.	119.18	VisiCalc , Software Arts/Dan Bricklin and Robert Frankston, VisiCorp
2.	1.	118.48	Choplifter , Dan Gorlin, Broderbund Software
3.	6.	99.32	Wizardry , Andrew Greenberg and Robert Woodhead, Sir-tech
4.	5.	95.14	Frogger , Olaf Lubeck, Sierra On-Line
5.	3.	82.59	Home Accountant , Bob Schoenburg, Larry Grodin, and Steve Pollack, Continental Software
6.	4.	72.48	PFS: File , John Page and D. D. Roberts, Software Publishing Corporation
7.	—	71.79	Ultima II , Lord British, Sierra On-Line
8.	—	62.03	Miner 2049er , Mike Livesay and Bill Hogue, Micro Fun
9.	7.	57.15	Screen Writer II , David Kidwell, Sierra On-Line
10.	9.	48.09	Snack Attack , Dan Illowsky, DataMost
11.	13.	38.33	The Arcade Machine , Chris Jochumson and Doug Carlston, Broderbund Software
12.	15.	35.20	Aztec , Paul Stephenson, DataMost
13.	8.	34.15	Word Handler , Leonard Elekman, Silicon Valley Systems
14.	23.	33.45	Master Type , Bruce Zweig, Lightning Software
15.	17.	31.01	Cannonball Blitz , Olaf Lubeck, Sierra On-Line
16.	11.	31.01	Castle Wolfenstein , Silas Warner, Muse
17.	10.	30.67	Apple Writer II , Paul Lutus, Apple Computer
18.	—	30.67	Apple Writer II Pre-Boot Disk , Kevin Armstrong and Mark Borgerson, Videx
19.	21.	30.32	Serpentine , David Snider, Broderbund Software
20.	23.	30.32	Zork I , Infocom
21.	19.	29.97	Knight of Diamonds , Andrew Greenberg and Robert Woodhead, Sir-tech
22.	26.	27.53	Deadline , Infocom
23.	—	27.53	Early Games for Young Children , John Paulson, Early Game Company
24.	12.	27.18	DB Master , Alpine Software/Stamley Crane and Jerry Macon; and Barney Stone, Stoneware
25.	26.	25.79	Star Blazer , Tony Suzuki, Broderbund Software
26.	—	24.05	Ernie's Quiz , Children's Television Workshop, Apple Computer
27.	16.	23.70	The Mask of the Sun , Chris Anson, Alan Clark, Larry Franks, and Margaret Anson, Ultrasoft
28.	—	20.91	Zork II , Infocom
29.	—	20.21	Multiplan , Microsoft
30.	20.	19.51	Zork III , Infocom
31.	—	19.51	Mix & Match , Children's Television Workshop, Apple Computer

MIMCO STICK

the Stick of Champions for the Apple ☐ *



- external socket gives easy access to full game i/o connector
- rocker switch selects between joystick and external socket
- high quality self-centering stick with trimming adjustments
- three hair trigger buttons for maximum game flexibility
- smooth 0 to 255 range in both x and y axes

Mimco Stick
1547 Cunard Road
Columbus, Ohio 43227
2.00 shipping/handling fee
(Ohio residents add 5.5% tax)
*trademark of Apple Computer Inc.

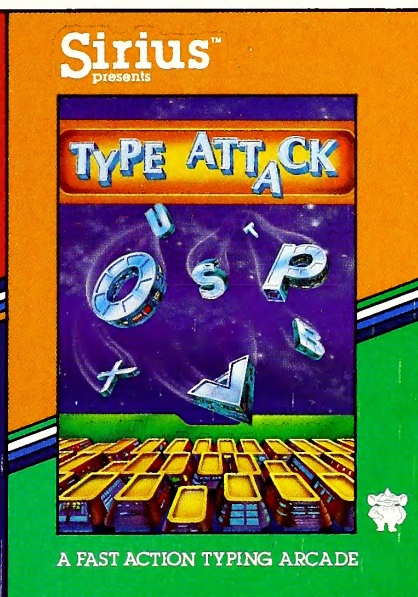
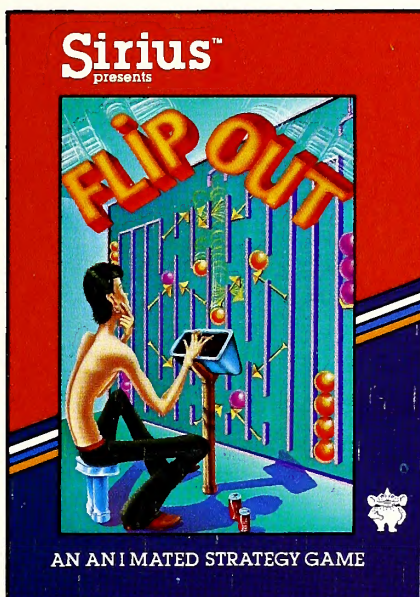


(614) 237-3380
(214) 454-3801

\$59⁹⁵

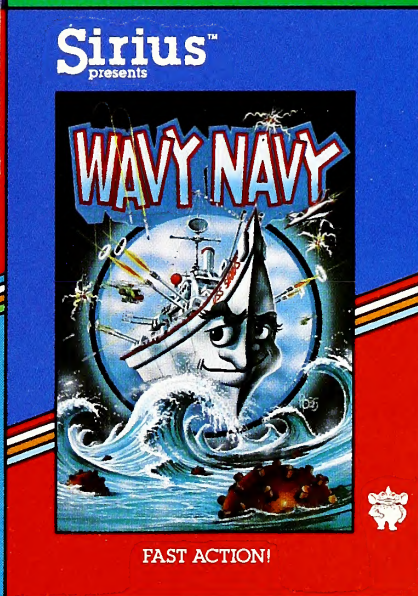
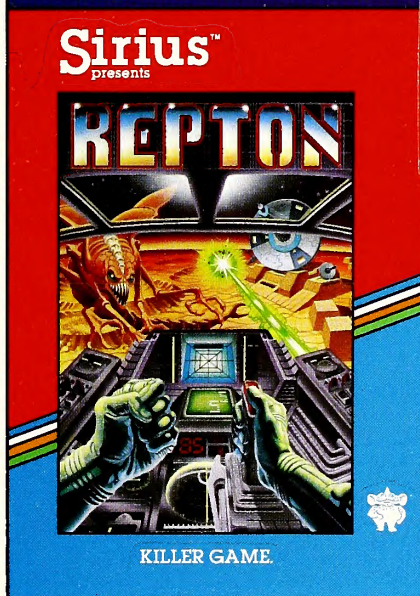
Have A Great Playday!

Take your marble to the top. Pick your spot and let it drop. Hope for a flip instead of a flop. Once you get it, the fun never stops! It's **FLIP OUT** — a crazy new strategy game for one or two players. Each marble you drop causes a chain reaction, so take your time and plan carefully. Plan right and you'll flip, if you didn't you Flip Out!



Turn your keyboard into a typing arcade! You can blast attacking letters and words right out of the sky. Type Attack was designed by a professional educator and the fast action game experts at Sirius. It features 39 pre-programmed lessons and 60 user defined lessons. Great sound, graphics and a real-time words per minute bar make improving your typing skills fun!

It is up to you to stop the invasion of the evil Quarriors and save Repton. You are armed with devastating Nuke Bombs, a Radar Screen, a Laser Gun and an Energy Shield. You'll need them all! You'll be attacked by Nova Cruisers and Single Saucers. You must avoid Spy Satellites and deadly Dyne-Beam Shooters and you must stop the Draynes from depleting the Reptonian power supply. Repton is a battle so thrilling you'll be relieved to find out you're still on earth when it's over!

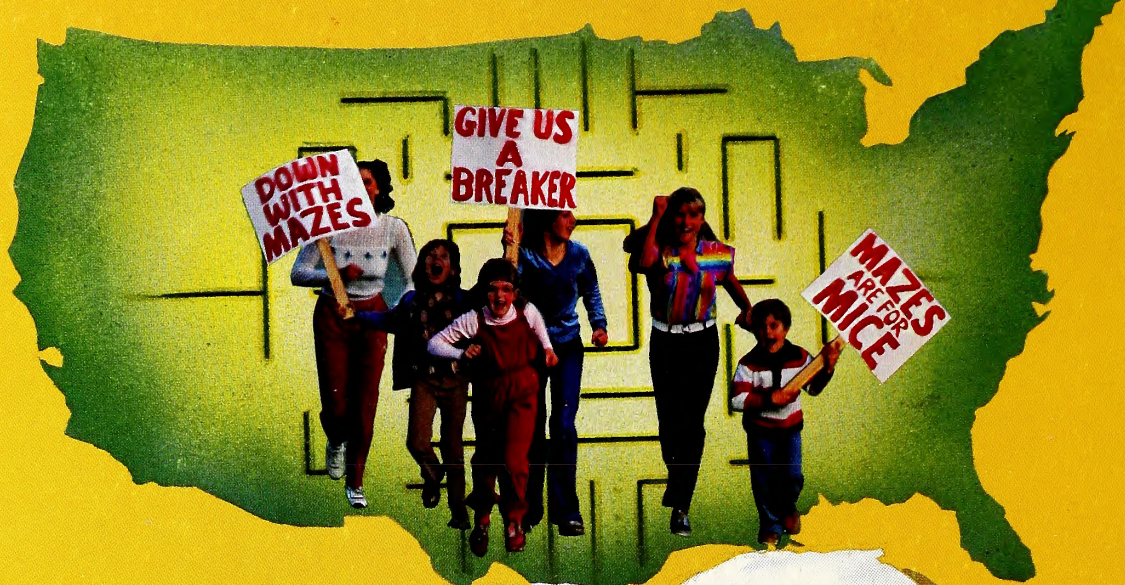


Talk about adventure on the high seas! You're blasting away at a squadron of enemy bombers and Kamikaze fighters from the deck of your P.T. boat. Suddenly you notice the sea is loaded with mines and an Exocet missile is screaming toward you on the horizon. Instinctively you jerk the joystick to the starboard, keeping your thumb on the fire button. Phew! That was close! Sometimes it's hard to believe Wavy Navy's just a video game.

New Games For Your Apple II From Sirius™

Type Attack, Wavy Navy, Flip Out and Repton packages, programs, and audio visuals © 1982 Sirius. Type Attack, Wavy Navy, Flip Out, Repton and Sirius are trademarks of Sirius Software, Inc. Apple is a trademark of Apple Computer, Inc.

For more information contact your local Sirius dealer or distributor or contact us at 10364 Rockingham Drive, Sacramento, CA 95827, (916) 366-1195.



Kids Protest Maze Games

COARSEGOLD, Calif.-

Carrying placards and shouting slogans, kids across the United States took to the streets today to protest tedious and outdated computer maze games.

No injuries were reported, and damage was limited to games based on stale mazes.

"The turnout doesn't amaze me," said R. Kaid, chairman of "M.A.D. - Mazes Are Dumb."

"Kids are tired of moving in and around stationary walls," he said. News of the demands struck to the heart of the computer software industry, and Sierra On-Line, Inc. responded with the NEW Jawbreaker.

"The entire screen moves - the

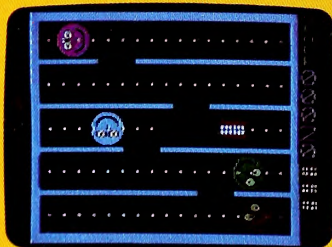
happy faces, the set of chompers, even the walls," said Chuckles, creator of the innovative game for Sierra On-Line.

"No maze creates as much excitement as our Jawbreaker," he said, and added, "The colors are brighter, the figures bigger, the action faster."

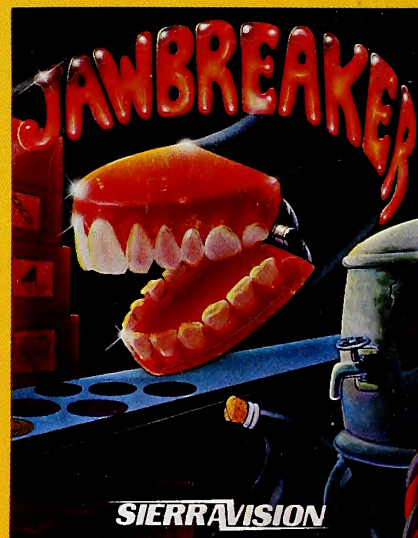
While maze makers waited for someone to buy their games, kids and other M.A.D. members were buying their NEW Jawbreaker for \$29.95 from dealers or directly from:

SIERRA ON-LINE
Sierra On-Line Building
Coarsegold, Calif. 93614
(209) 683-6858

THE END OF THE MAZE CRAZE



FOR APPLE AND ATARI



ADD ONE DOLLAR FOR SHIPPING.
VISA • MASTERCARD • CHECK • COD ACCEPTED.

SIERRA VISION™

TM designates trademark of SIERRA ON-LINE, INC.

Sierra
ON-LINE INC.